YAMAHA

Fazer

SERVICE MANUAL

FAZER
SERVICE MANUAL

FOREWORD

This Workshop Manual has been prepared for use by the Yamaha Motor India Private Ltd. Authorised Dealerships and their service personnel to attend to servicing of Fazer Motorcycles. It is not possible to include entire service education into this Manual. It is assumed that persons using this book to perform maintenance and repairs on Fazer Motorcycles have a basic understanding of mechanical concepts and procedures inherent to Motorcycle repair technology. Without such knowledge, attempted repairs or service of this model may render it unfit for use and / or unsafe.

Yamaha Motor India Private Ltd. continually strives to improve all its models. Modifications and significant changes in specifications or procedures will be informed to all Yamaha Motor India Private Ltd. Authorised Dealerships through Service Actions and will wherever considered necessary, appear in future editions of this Workshop Manual.

Service Department
Yamaha Motor India Private Ltd.

HOW TO USE THIS MANUAL

MANUAL ORGANISATION

This manual consists of chapters for the main categories of subjects. (See "Illustrated symbols")

1st title [1] : This is the Title of the Chapter with its symbol on the upper right corner of each page.

2nd title [2] : This title indicates the Section of the chapter and only appears on the first page of each section. It is located in the centre of the page.

3rd title [3] : This title indicates a Subsection that is followed by step-by-step procedures accompanied by corresponding illustrations.

EXPLODED DIAGRAMS

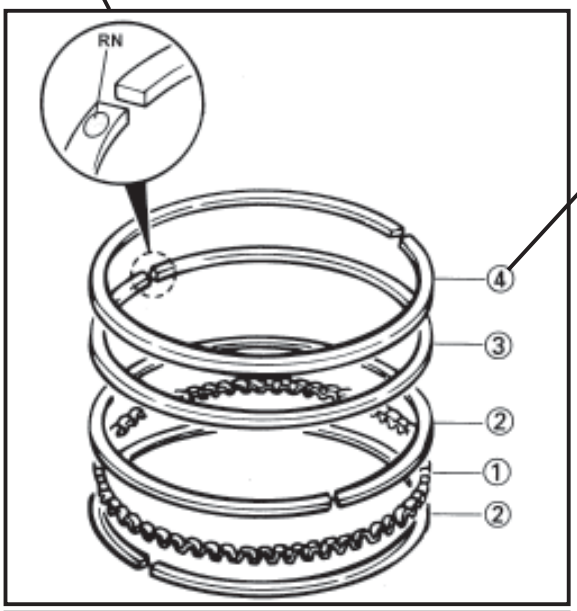
To help identify parts and clarify procedure steps, there are Exploded Diagrams at start of each Removal and Disassembly section.

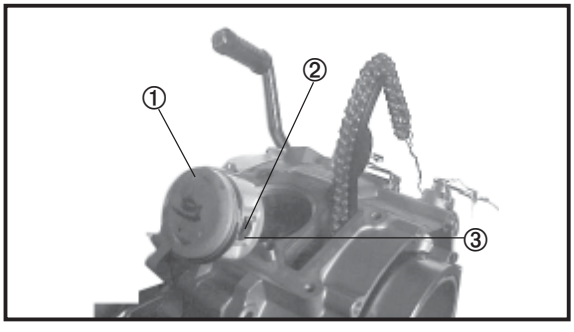
1. An easy-to-see Exploded Diagram [4] is provided for Disassembly and Assembly jobs.
2. Numbers [5] are given in the order of jobs in the exploded diagram. A number that is enclosed by a circle indicates a part.
3. An explanation of jobs and notes are presented in an easy-to-read way by the use of Symbol Marks [6]. The meaning of the Symbol Marks are given on the next page.
4. For jobs requiring more information, the step-by-step format supplements [7] are given in addition to the exploded diagram.

[1] ENG 

[4] ENGINE ASSEMBLY AND ADJUSTMENTS

[2] ENGINE ASSEMBLY





PISTON RING, PISTON AND CYLINDER INSTALLATION

1. Install in following sequence [3]
   - Expander Spacer (Oil Ring) ①
   - Side Rails (Oil Ring) ②
   - 2nd Ring ③
   - Top Ring ④

[5]

NOTE :

- Make sure to install the Piston Rings so that the RN marks are located on the upper side of the 2nd Ring.
- Lubricate the Piston and Piston Rings with Engine Oil.

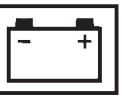
2. Install : [7]
   - Piston ①
   - Piston Pin ② using piston pin tool

[6]  **Piston Pin replacer tool**
YSST - 607

- Piston Pin Circlip ③ **New**

ILLUSTRATED SYMBOLS

Illustrated symbols 1 to 8 are designed as thumb tabs to indicate the chapter's number and content.

1. General Information — GEN INFO 
2. Specifications — SPEC 
3. Periodic inspection and adjustment — INSP ADJ 
4. Engine — ENG 
5. Carburetion — CARB 
6. Chassis — CHAS 
7. Electrical — ELEC 
8. Troubleshooting — TRBL SHTG 

Illustrated symbols 9 to 15 are used to identify the specifications appearing in the text.

9. Filling fluid 
10. Lubricant 
11. Special Tool 
12. Torque 
13. Wear Limit, Clearance 
14. Engine speed 
15. Resistance, Voltage, Current 

Illustrated symbols 16 to 21 in the exploded diagrams indicate the types of lubricants and lubrication points.

16. Apply engine oil — (E) 
17. Apply gear oil — (G) 
18. Apply molybdenum disulfide oil — (M) 
19. Apply wheel bearing grease — (B) 
20. Apply lightweight lithium-soap base grease — (LS) 
21. Apply molybdenum disulfide grease — (M) 

Illustrated symbols 22 and 23 in the exploded diagrams indicate where to apply locking agent and when to install new parts

22. Apply locking agent (LOCKTITE*) — (LT) 
23. Use New One — New

INDEX

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SPECIFICATIONS	 SPEC 2
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CHASSIS	 CHAS 6
ELECTRICAL	 ELEC 7
TROUBLE SHOOTING	? TRBL SHTG 8

CHAPTER 1

GENERAL INFORMATION

MOTORCYCLE IDENTIFICATION

FRAME SERIAL NUMBER 1-1
ENGINE SERIAL NUMBER 1-1

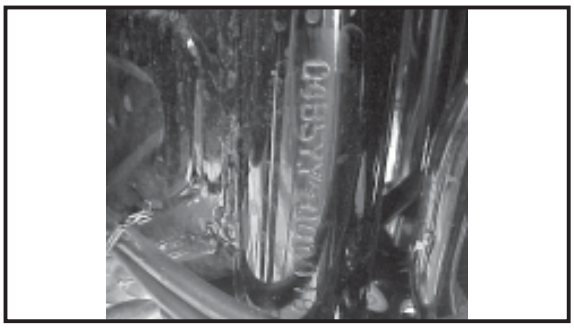
IMPORTANT INFORMATION

PREPARATION FOR DISASSEMBLY 1-2
ALL REPLACEMENT PARTS 1-3
GASKETS, OIL SEALS, AND O-RINGS 1-3
LOCK WASHERS/PLATES AND COTTER PINS 1-3
BEARINGS AND OIL SEALS 1-3
CIRCLIPS 1-3

SPECIAL TOOLS

SPECIAL SERVICE TOOLS 1-4
SERVICE INSTRUMENTS 1-7
SPECIAL SERVICE MATERIALS 1-8

MOTORCYCLE IDENTIFICATION



FRAME SERIAL NUMBER

The Frame Serial Number ① is stamped into the right side of the Steering Head Pipe.

ENGINE SERIAL NUMBER

The Engine Serial Number ② is stamped on the top portion of RH Crankcase. (Engine Serial Number does not contain Year and Month of production)

XX	X	5YY	XXXXXX
YEAR OF PRODUCTION	MONTH CODE	MODEL CODE	UNIT PRODUCTION NUMBER

Year of Production	:	2 Digits standing for last two digits of year Eg. **0 0** - 2000, **0 1** - 2001 .....
Month Code	:	One alphabet standing for Month Eg. **A** - January, **B** - February..... **M** - December (**I** - Not Used for Month)
Starting Serial Number	**:**	**5YY 000001**

⚠WARNING

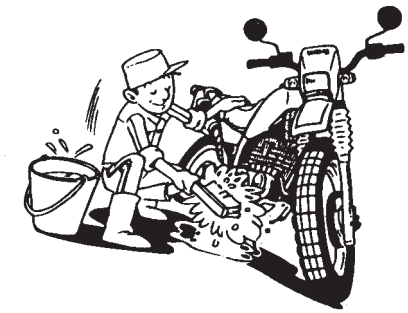
Do not tamper with any of these numbers. It may lead to legal action.

NOTE :

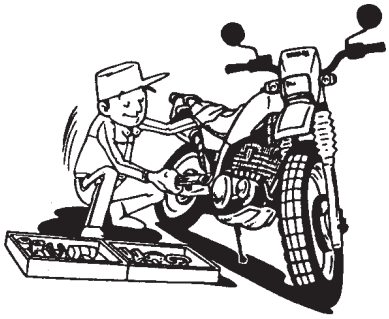
Designs and sepecifications are subject to change without notice.

IMPORTANT INFORMATION

PREPARATION FOR DISASSEMBLY



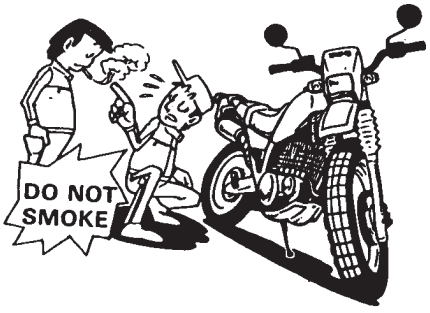
1. Remove all dirt, mud, dust and foreign material before disassembly.



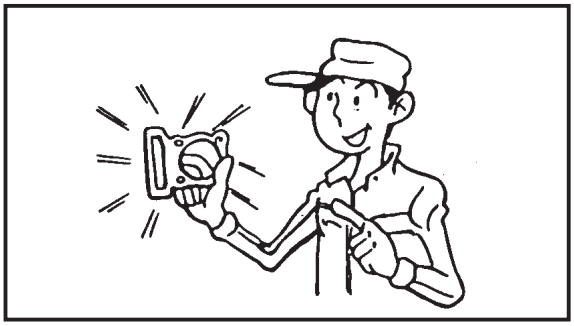
2. Use proper Tools and Cleaning Equipment. Refer to “YAMAHA SPECIAL SERVICE TOOLS”.

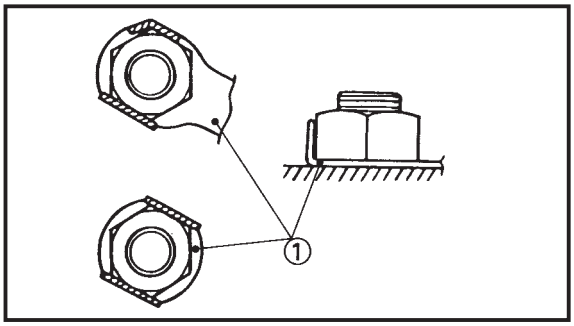
3. When disassembling the Motorcycle, keep mated parts together. This includes gears, Cylinder, Piston and other mated parts that have been “mated” through normal wear. Mated parts must be reused as an assembly or replaced.

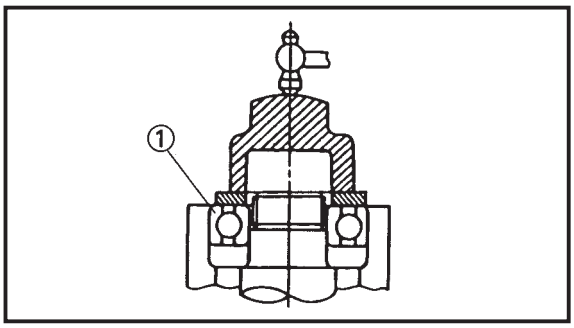
4. During the Motorcycle disassembly, clean all parts and place them in trays in the order of disassembly. This will speed up assembly time and help assure that all parts are correctly reinstalled.

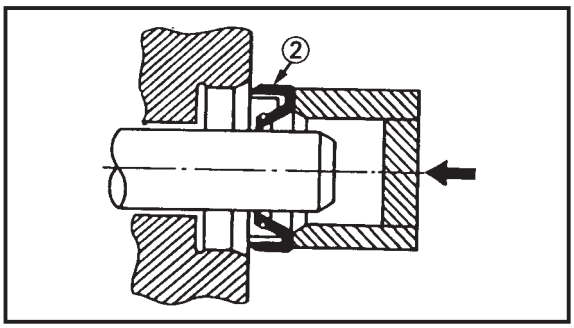


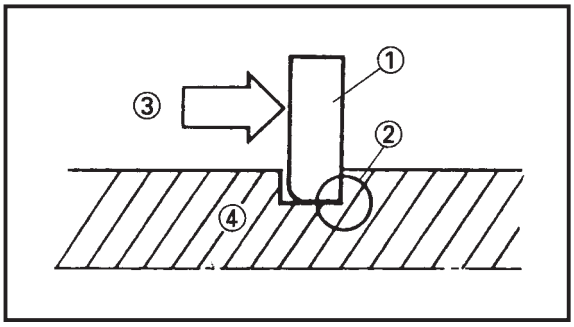
5. Keep Motorcycle and its parts away from any source of fire.











ALL REPLACEMENT PARTS

1. Use only genuine Yamaha parts for all replacements. Use Yamalube Oil and Grease recommended by Yamaha for assembly and adjustment. Other brands may be similar in function and appearance, but inferior in quality.

GASKETS, OIL SEALS, AND O-RINGS

1. All Gaskets, Seals and O-rings should be replaced when the Engine is overhauled.
2. All surfaces where Gasket, Oil Seal lips and O-rings contact must be cleaned and Lubricated.

LOCK WASHERS/PLATES AND COTTER PINS

1. All Lock Washers/plates ① and Cotter Pins must be replaced when they are removed. Lock tab (s) should be bent along the Bolt

BEARINGS AND OIL SEALS

1. Install the bearing (s) ① and Oil Seal (s) ② with their manufacturer's marks or numbers facing outward. (In other words, the stamped letters must be on the side exposed to view.) When installing Oil Seal (s), lubricate a light coating of lightweight lithium base grease to the seal lip(s). Oil the Bearings liberally when installing.

CAUTION:

Do not use compressed air to spin the Bearings dry. This causes damage to the Bearing surfaces.

CIRCLIPS

1. All Circlips should be inspected carefully before reassembly. Always replace Piston Pin Clips after one use. Replace distorted Circlips. When installing a circlip ①, make sure that the sharp-edged corner ② is positioned opposite to the thrust ③ it receives. See the sectional view of shaft ④.

⚠WARNING

If the Circlip is fitted the wrong way it would cause it to jump off its groove and damage related components.

YAMAHA SPECIAL SERVICE TOOLS

The appropriate Yamaha Special Service Tools are necessary for proper maintenance of the Motorcycle. Using the correct Yamaha Special Service Tool will help to prevent damage caused by the use of improper tools or improvised techniques. The following is the detailed list of all Yamaha Special Service Tools with their application.
Refer to the list provided to avoid errors when placing an order for Yamaha Special service tools.

1. Magneto Holder
YSST -627

This tool is used to hold the Magneto when removing or installing the Magneto Securing Nut and Primary Drive Gear Nut

2. Magneto Puller with Spacer
YSST-628

This tool is used to remove the Magneto

3. Valve Spring Compressor
YSST - 603

This tool is used to to remove and install Valve Spring Assemblies.

4. Piston Base
YSST - 604

This tool is needed to support the Piston while installing Cylinder.

5. Valve Clearance Adjusting Tool.
YSST - 606

This tool is used to adjust Valve clearance.

6. Piston Pin Replacer
YSST -607

This tool is used to replace Piston Pin.

7. Rocker Arm Shaft Puller
YSST - 608 B

This tool is used to remove/install Rocker Arm Shaft.

8. Clutch Hub Holder
YSST - 233

This tool is used to hold the Clutch Hub when removing or installing Clutch Main Shaft Nut.

9. Crank Shaft Removal Tool.
YSST - 265

This tool is used to remove the Crank Shaft from the Crank Case.

10. Crank Shaft Installing Tool with spacer
(a) YSST - 266
(b) YSST - 267

These tools are used for installation of Crank Shaft.

11. Driving Sprocket Holder
YSST- 605

This tool is used to hold the Driving Sprocket when removing or installing Driving Sprocket Nut

12. Torx Bit (T - 30)
YSST - 611

This tool is used to loosen or tighten the Cam Shifter Segment Screw.

13. Steering Nut Socket
YSST - 621

This tool is used to loosen or tighten the Steering Ring Nut.

14. Scraper
YSST - 612

This tool is used for scraping the sealent from Crankcase surface.

15. Feeler Gauge
YSST - 615

This tool is used to check Valve Clearance.

16. T.F.F. Oil Seal Removing Tool.
YSST - 270

This tool is used to remove T.F.F. oil seal.

17 T -Handle
YSST - 213

This tool is used to hold the TFF plunger for loosening and tightening of Hex Socket Head Bolt

18. T.F.F. Oil Seal Installation Tool
YSST-275

This tool is used when installing the TFF Oil Seal.

19 Racer Installing Tool
YSST-626

To install upper and lower Racer Bearing

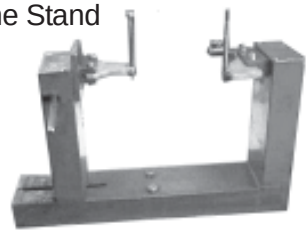
20 TFF Top Plug Spanner
YSST-214

To loosen & tighten the front fork top plug.

21. Spanner - Speedometer Gear Nut.
YSST - 237

This tool is used to loosen or tighten the Speedometer Gear Nut.

22. Engine Stand



This fixture is used to hold the Engine for its disassembly and assembly.

23. Oil Seal Installing Tool.
YSST - 622

This tool is used to install Oil Seal in Crank Case Cover#2.

24. Bearing Puller
YSST - 623

This tool is used to remove the Bearing 6201 of the Axle Main.

25. Bearing Puller
YSST - 624

This tool is used to remove the Bearing 6202 of the Axle Drive

26. Center Plug Spanner
YSST-625

This tool is used to remove/install the Center Plug from Crank case Cover#1 (L.H.)

27. Spoke Tighting Tool
YSST- 629

To Tighten / Loosen the Spoke.

28. Plastic Bush - Rear Shock Absorber
YSST-703

This tool is used to protect the plastic shell and painted parts.

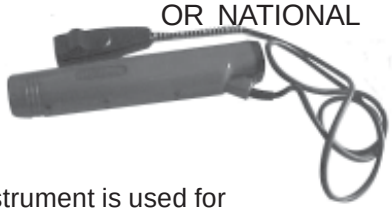
SERVICE INSTRUMENTS

The following Service Instruments are necessary for complete and accurate tune up of Motorcycle

1. Tachometer
YSST - 613

This Instrument is used for checking the Engine RPM

2. Timing light (SKC S14-121) OR NATIONAL

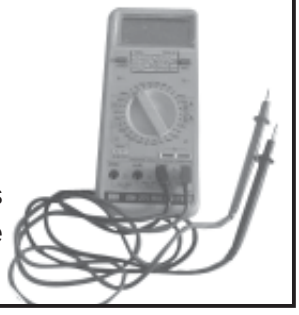


This instrument is used for checking ignition timing

3. Compression Gauge

This instrument is used for checking the engine compression

4. Mutimeter



This instrument is used for checking the electrical system.

5. Vernier Calliper
(150 mm)

This instrument is used for measuring length, width & thickness of components

6. Micrometer
(0-25 mm) & (50-75 mm)

This instrument is used for measuring Piston size, Valve stem size etc.

7. 'CO' Gas Analyser

This instrument is used for measuring 'CO' concentration in exhaust of motorcycle

8.Hydrometer

This instrument is used for measuring specific gravity of Battery Electrolyte

9. Tyre pressure gauge

This instrument is used for checking the Tyre Pressure

11. Torque Wrench
(10-50 Ft-Lb)
(20-100 Ft-Lb)

This tool is used to tighten the Nuts/Bolts at a specified torque.

10. Vaccum Gauge

This instrument is used for checking intake vaccum.

12. Feeler gauge

This instrument is used to check clearance/ gaps between parts.

13. Temperature Meter

This instrument is used for measuring the oil temperature of Engine

SPECIAL SERVICE MATERIAL

The following Service material are necessary to use at the time of assembly of various parts.

1. YAMAHA Bond
TG-1215

This adhesive is used on mating surfaces while assembling Crankcase#1 and #2.

2. LOCTITE
Three Bond 1322

This adhesive is used for Torx Screw tightening.

CHAPTER 2.

SPECIFICATIONS

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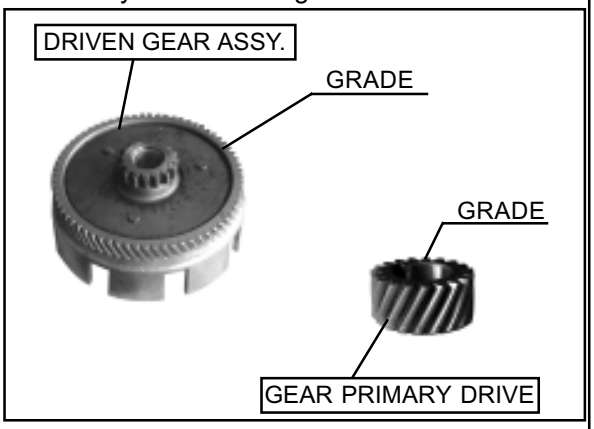
ENGINE LUBRICATION ROUTE 2-18
ENGINE BEARINGS 2-20
CABLE ROUTING 2-21

GENERAL SPECIFICATIONS

DESCRIPTION	SPECIFICATION
Model :	FAZER
Model Code :	5YY1
Engine model code:	5YY1
DIMENSIONS:	
Overall length	2065 mm
Overall width	730 mm
Overall height	1060 mm
Seat height	800 mm
Wheelbase	1300 mm
Minimum ground clearance	160 mm
Minimum turning radius	2065 mm
Dry weight :	115 kg
Basic weight : (With Oil and full Fuel Tank)	125 kg
ENGINE :	
Engine type	Air-cooled 4-stroke, SOHC
Cylinder arrangement	Forward-inclined, single cylinder
Displacement	123.7 cm³
Bore X Stroke	54 X 54 mm
Compression ratio	10:1
Starting system	Kick starter
Lubrication system	Wet sump
Max power	11 BHP (8.0 KW) @ 8500 RPM
Torque	1.06 Kgm, 10.4 NM @ 6500 rpm
Oil type or grade :	
Engine oil	Yamalube 4-stroke Oil (20W40 Type SG)
Oil capacity :	
Engine oil	
Periodic oil replacement	1.0 L
Total amount	1.2 L
Air filter :	Washable, Dual Foam, Wet type (Oil soaked)
FUEL :	
Fuel Tank capacity	13 Ltrs.
Fuel reserve amount	1.2 Ltrs.
Carburetor :	
Type	BS-25
Manufacturer	(UCAL)
Spark plug :	
Type/manufacturer	R-CR7HSA/NGK
Spark Plug gap	0.6 ~ 0.7 mm

DESCRIPTION		SPECIFICATION
Clutch type :		Wet, Multiple disc
Transmission :		
Primary reduction system		Helical gear
Primary reduction ratio		68/19 (3.579 : 1)
Secondary reduction system		Chain drive
Secondary reduction ratio		45/14 (3.214 : 1)
Transmission type		Constant mesh 4-speed
Operation		Left foot operation
Gear ratio	1st	33/12 (2.750)
	2nd	27/16 (1.688)
	3rd	24/20 (1.200)
	4th	21/23 (0.913)
Primary Drive Grading		Matching of Grades: Gear Primary Drive / Primary Driven Gear Assy. — B ⟷ A; C ⟷ B; D ⟷ C; E ⟷ D; F ⟷ E
Chassis :		
Frame type		Diamond
Caster angle		26.4°
Trail		83 mm
Tyre :		
Type		With tube
Size	Front	2.75 - 18, 4 PR
	Rear	3.00 - 18, 6 PR
Manufacturer	Front	LOCAL MADE
	Rear	LOCAL MADE
Type	Front	RIB TYPE/ZAPPER TYPE
	Rear	UNIVERSAL/ZAPPER TYPE
Tyre pressure (cold tyre) :		
Loading condition A*		0 ~ 90 kg (0 ~ 198 lbs)
	Front	25 PSI (1.75 kgf/cm²)
	Rear	28 PSI (2.00 kgf/cm²)
Loading condition B*		90 ~ 162 kg (198~408 lbs)
	Front	25 PSI (1.75 kgf/cm²)
	Rear	32 PSI (2.30 kgf/cm²)



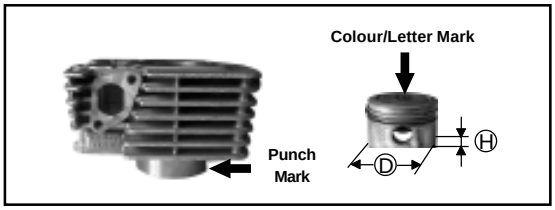
*Load is total weight of cargo, rider, passenger and accessories.

GENERAL SPECIFICATIONS

DESCRIPTION		SPECIFICATION
Brake :		
Front brake	Type	Drum Brake (Dia 150 mm)
	Operation	Right hand operation
Rear brake	Type	Drum brake (Dia 130 mm)
	Operation	Right foot operation
Suspension :		
Front suspension		Telescopic fork
Rear suspension		Swingarm
Shock absorbser :		
Front shock absorber		Coil spring/Oil damper
Rear shock absorber		Coil spring/Oil damper
Wheel travel :		
Front wheel travel		120 mm
Rear wheel travel		90 mm
Electrical :		
Ignition system		CDI (Digital)
Generator system		Flywheel magneto
Battery type		LOCAL MADE
Battery capacity		12V - 2.5 AH
Headlight type :		Bulb type
Headlight bulb type		S-1 Type Bulb
Bulb (voltage - wattage x quantity) :		
Headlight		12V - 25W/25W x 2
Tail/Brake light		12V - 5W/21W x 1
Flasher light		12V - 10W x 4
Meter light		12V - 3.4W x 2
“NEUTRAL” indicator light		12V - 3.4W x 1
“HIGH BEAM” indicator light		12V - 3.4W x 1
“TURN” indicator light		12V - 1.7W x 2
HORN		12V - 1.5 Amp

MAINTENANCE SPECIFICATIONS

ENGINE

<table>
<tr><th>DESCRIPTION</th><th>SPECIFICATION</th></tr>
<tr><td>Cylinder :
Bore size</td><td>
54.000 ~ 54.018 mm
(in five grades)</td></tr>
<tr><td>Piston :
Piston to Cylinder Clearance
<Limit>
Piston size “D”
Cylinder Piston Grading
 

Measuring point “H”
Piston offset
Piston offset direction
Piston pin bore inside diameter
Piston pin outside diameter</td><td>
0.020 ~ 0.027 mm
<0.15mm>
53.977 ~ 53.996 mm
(in five grades)
<table><tr><th colspan="3">Matching of Grades</th></tr><tr><td colspan="2">Piston</td><td>Cylinder</td></tr><tr><td colspan="2">Mark</td><td>Letter</td></tr><tr><td>Colour</td><td>Letter</td><td>Punch Mark</td></tr><tr><td>Red</td><td>A</td><td>A</td></tr><tr><td>Orange</td><td>B</td><td>B</td></tr><tr><td>Green</td><td>C</td><td>C</td></tr><tr><td>Violet</td><td>D</td><td>D</td></tr><tr><td>Blue</td><td>E</td><td>E</td></tr></table>
4.5 mm
0.5 mm
Intake side
15.002 ~ 15.013 mm
15.991 ~ 15.000 mm</td></tr>
<tr><td>Piston rings :
Top ring :
Type
Dimensions (B x T)
End gap (installed)
<Limit>
Side clearance (installed)
<Limit>
2nd ring :
Type
Dimensions (B x T)
End gap (installed)
<Limit>
Side clearance
<Limit>
Oil ring :
Dimensions (B x T)
End gap (installed)
Side Clearance
(For Rail Upper and Rail Lower)</td><td>

Barrel
1.0 x 2.1 mm
0.15 ~ 0.30 mm
<0.40mm>
0.030 ~ 0.07 mm
<0.12 mm>

Taper
1.0 x 2.1 mm
0.30 ~ 0.45 mm
<0.55mm>
0.020 ~ 0.060 mm
<0.12 mm>

2.0 x 2.2 mm
0.2 ~ 0.7 mm
0.040</td></tr>
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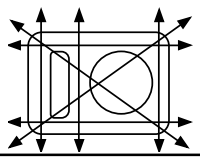
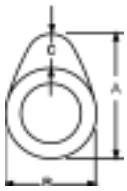
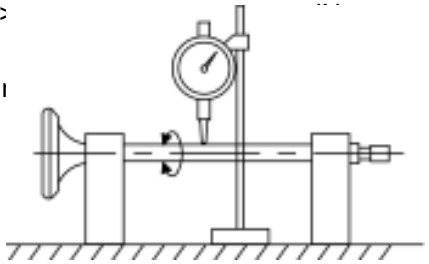
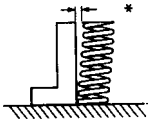
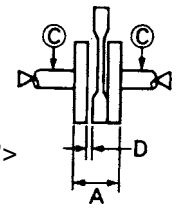
MAINTENANCE SPECIFICATIONS

DESCRIPTION		SPECIFICATION
Cylinder head :		
<Warp limit> 		<0.03 mm (0.0012 in)> * Lines indicate straightedge measurement.
Camshaft :		
Drive method		Chain Drive
Cam dimensions		
Intake 	" A "	25.881 ~ 25.981 mm
	<Limit>	<25.851 mm>
	" B "	21.195 ~ 21.295 mm
	<Limit>	<21.165 mm>
	" C "	4.931 mm
Exhaust	" A "	25.841 ~ 25.941 mm
	<Limit>	<25.811 mm>
	" B "	21.05 ~ 21.15 mm
	<Limit>	<21.02 mm>
	" C "	0.03 mm
Rocker Arm/ Rocker Arm Shaft :		
Inside diameter (Rocker Arm)		10.000 ~ 10.015 mm
	<Limit>	<10.03 mm>
Outside diameter (Rocker Armshaft)		9.981 ~ 9.991 mm
	<Limit>	<9.95 mm>
Cam chain/Sprocket :		
Cam chain type/No. of links		SILENT CAM CHAIN / 90
No. of Teeth Sprocket		36
Cam chain adjustment method		Automatic
Valve, Valve Seat, Valve Guide :		
Valve clearance (cold)	IN	0.08 ~ 0.12 mm
	EX	0.10 ~ 0.14 mm
Valve dimensions :  Head Dia. / Face Width / Seat Width / Margin Thickness		
"A" head diameter	IN	33.9 ~ 34.1 mm
	EX	28.4 ~ 28.6 mm
"B" face width	IN	2.26 mm
	EX	2.26 mm
"C" seat width	IN	0.9 ~ 1.1 mm
	EX	0.9 ~ 1.1 mm
"D" margin thickness	IN	0.8 ~ 1.2 mm
	EX	0.8 ~ 1.2 mm

DESCRIPTION		SPECIFICATION
Stem outside diameter	IN	5.975 ~ 5.990 mm
	EX	5.960 ~ 5.975 mm
<Limit>	IN	<5.950 mm>
	EX	<5.935 mm>
Guide inside diameter	IN	6.000 ~ 6.012 mm
	EX	6.000 ~ 6.012 mm
<Limit>	IN	<6.042 mm>
	EX	<6.042 mm>
Stem to guide clearance	IN	0.010 ~0.037 mm
	EX	0.025 ~ 0.052 mm
<Limit>		<0.08 mm>
		<0.010 mm>
Stem run		0.010 mm
Valve seat width	IN	0.9 ~ 1.1 mm
	EX	0.9 ~ 1.1 mm
<Limit>	IN	<1.6 mm>
	EX	<1.6 mm>
Valve spring :		
Free length	IN	39.62 mm
	EX	39.62 mm
<Limit>	IN	38.17 mm
	EX	38.17 mm
Set length (valve closed)	IN	25.6 mm
	EX	25.6 mm
<Tilt limit>	IN	2.5°/1.7 mm
	EX	2.5°/1.7 mm
Compression pressure (installed)	IN	104 ~ 119.7 Nm (10.60 ~ 12.21 kgf)
	EX	104 ~ 119.7 Nm (10.60 ~ 12.21 kgf)
Direction of winding (top view)		Clockwise
Crankshaft :		
Crank width “A”		46.95 ~ 47.00 mm
<Runout limit “C”>		<0.03 mm>
Big end side clearance “D”		0.15 ~ 0.45 mm
<Small end free play limit “F”>		<0.8 mm>
Balancer		
Balancer Drive Method		Gear - Riged Type
Shifter :		
Shifter type		Cam Drum and Guide bar
Kick starter :		
Kick starter type		Kick and Ratchet Type
Kick clip friction force		7.8 ~ 11.8 Nm (0.8 ~ 1.2 kgf)







MATCHING OF GRADE	
BALANCER GEAR	CRANK GEAR
D	X
E	Y
F	Z
G	A
H	B

MAINTENANCE SPECIFICATIONS

DESCRIPTION		SPECIFICATION
Clutch :		
Friction plate thickness		2.90 ~ 3.10 mm
Quantity		5 pcs.
<Friction plate wear limit>		<2.80 mm>
Clutch Plate thickness		1.6 ± 0.15 mm
Quantity		4 pcs.
<Wrap limit>		0.05 mm
Clutch Spring free length		32 mm
Quantity		4 pcs.
Minimum length		30.5 mm
Clutch release method		Inner push, cam push
<Push rod bendinglimit>		<0.5 mm>
Carburetor :		
I. D. Mark		5YY1
Main Jet	(M.J.)	#127.5
Main Air Jet size	(M.A.J.)	85
Jet needle	(J.N.)	4DG9-2
Needle jet	(N.J.)	E-3M (906)
Pilot Air Jet	(PAJ-1)	1.4
Pilot outlet	(P.O.)	0.8
Pilot jet	(P. J.)	# 15
Valve seat size	(V.S.)	1.8
Starter jet	(G.S.1)	25
	(G.S.2)	0.8
Fuel Level		6.5 ± 0.5 above the joint line of MCB (Main Body Chamber) and F.C.B. (Float Chamber Body)
Float Height		29 mm ± 0.5 Below the Venturi Axis
Engine idle speed		1,300 ~1,500 r/min.
Intake vaccum		
New Vehicle		26.0 ~ 31.4 kPa
Market Run Vehicle		31.3 ~ 36.7 kPa
Lubrication system :		
Oil filter type		Wire mesh type
Oil filter type		Trochoid type
Tip Clearance “A” or “B”		0.15 mm
<Limit>		<0.2 mm>
Side clearance		0.06 ~ 0.10 mm
<Limit>		<0.15 mm>
Housing and rotor clearance		0.08 ~ 0.13 mm
<Limit>		<0.18 mm>

TIGHTENING TORQUE (ENGINE)

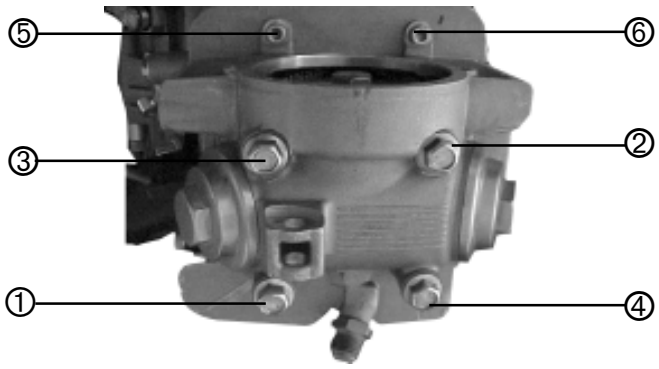
Part to be tightened	Parts name	Thread size	Q'ty	Tightening torque			Remark
				Nm	m.kg	ft.lb	
Cylinder Head	Bolt	M8	4	22	2.2	17	
	Bolt	M6	2	10	1.0	7.2	
Spark Plug	-	M10	1	12.5	1.25	9	
Cylinder Head Side Cover	Bolt	M6	2	10	1.0	7.2	
Valve Cover	-	M45	2	17.5	1.75	13	
CDI Magneto Rotor	Bolt	M6	1	70	7.0	51	
Stopper Guide	Bolt	M6	1	10	1.0	7.2	
Adjust Screw	Nut	M5	2	8	0.8	5.8	
Sprocket (Timing Chain)	Bolt	M8	1	20	2.0	14.5	
Plate To Head Cylinder	Bolt	M6	1	10	1.0	7.2	
Plug (Tensioner Assembly)	Plug	M8	1	8	0.8	5.8	
Tensioner Assembly	Bolt	M6	2	10	1.0	7.2	
Oil Pump Assembly	Screw	M6	2	7	0.7	5.1	
Drain Plug	Screw	M12	1	20	2.0	14.5	
Pump Cover	Screw	M5	1	4	0.4	3.6	
Intake Manifold	Bolt	M6	2	10	1.0	7.2	
Carburetor Joint (Manifold)	Screw	M4	1	2	0.2	1.5	
Carburetor Joint (Air filter)	Screw	M4	1	2	0.2	1.5	
Air filter Case	Bolt	M6	2	7	0.7	5.1	
Muffler (Cylinder Head)	Bolt	M6	1	7	0.7	5.1	
Muffler Assembly	Bolt	M8	1	15	1.5	11	
Crankcase 1 and 2	Bolt	M6	2	10	1.0	7.2	
	Bolt	M6	6	10	1.0	7.2	
	Bolt	M6	2	10	1.0	7.2	
Crankcase Cover 1	Bolt	M6	5	10	1.0	7.2	
	Bolt	M6	2	10	1.0	7.2	
Cover Chain Case 1	Screw	M6	2	7	0.7	5.1	
Crankcase Cover 2	Bolt	M6	7	10	1.0	7.2	
	Bolt	M6	2	10	1.0	7.2	
Timing Mark Check Plug	Screw	M14	1	7	0.7	5.1	
Center Plug	Screw	M32	1	7	0.7	5.1	
Kick Crank Assembly	Nut	M12	1	50	5.0	36	
Primary Drive Gear	Nut	M12	1	70	7.0	51	
Pressure Plate	Bolt	M5	4	6	0.6	4.3	
Clutch Boss	Nut	M12	1	60	6.0	43.5	Use Lock W.
Push Rod	Nut	M6	1	8	0.8	5.8	
Plate	Screw	M6	2	7	0.7	5.1	
Drive Sprocket	Nut	M6	1	10	1.0	7.2	
Shift Pedal	Bolt	M6	1	10	1.0	7.2	
Segment	Screw	M6	1	12	1.2	9	Torx Bolt

TIGHTENING TORQUE (ENGINE)

Part to be tightened	Parts name	Thread size	Q'ty	Tightening torque			Remark
				Nm	m.kg	ft.lb	
Stopper lever	Bolt	M6	1	10	1.0	7.2	
Sensor Assembly	Bolt	M6	2	10	1.0	7.2	
Neutral Switch Assembly	-	M10	1	4	0.4	3	

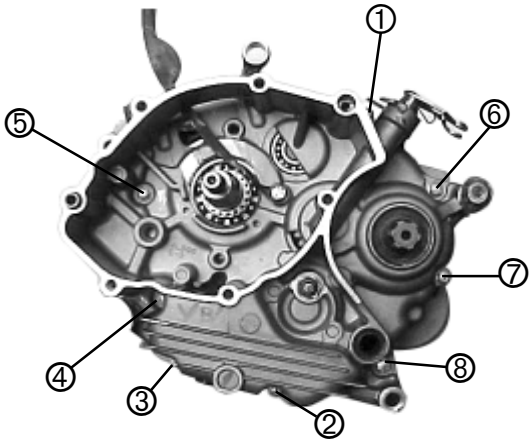
Tightening sequence

Cylinder Head



Crankcase

Right - hand



Left - hand

CHASSIS

DESCRIPTION		SPECIFICATION
Steering system :		
Steering Bearing type		Retainer Ball Cage
No./size of steel balls	(upper)	19 pcs. / 1/4 in
	(lower)	16 pcs. / 1/4 in
Front suspension :		
Front Fork travel		120 mm
Fork Spring free length		316.9 mm
<Limit>		311.9 mm
Spring rate	(K1)	7.4 N/mm
	(K2)	10.8 N/mm
Stroke	(K1)	0 ~ 70 mm
	(K2)	70 ~ 120 mm
Oil grade		Special YAMAHA oil. 10W or Equivalent
Rear suspension :		
Shock Absorber travel		90 mm
Spring free length		343.2 ± 2 mm
Fitting length		231.9 mm
Spring rate	(K1)	15.08 N/mm
	(K2)	22.64 N/mm
Stroke	(K1)	0 ~ 38 mm
	(K2)	38 ~ 90 mm
Swingarm :		
<Free play limit>	End	<1.0 mm>
	Side	<1.0 mm>
Front wheel :		
Type		Spoke wheel
Rim size		1.6 x 18”
Rim material		Steel
<Rim run out limit>	Radial	<1.0 mm>
	Lateral	<0.5 mm>
Rear wheel :		
Type		Spoke wheel
Rim size		1.6 x 18”
Rim material		Steel
<Rim rounout limit>	Radial	<1.0 mm>
	Lateral	<0.5 mm>
Drive chain :		
Type/manufacturer		R-428HCS-120-1/M/S - LGB
Number of links		120
Chain slack		20 ~ 30 mm

MAINTENANCE SPECIFICATIONS

DESCRIPTION	SPECIFICATION
Front Drum Brake :	
Type	Leading, Trailing
Brake Drum inside diameter	150mm
<Wear limit>	<151>
Lining Thickness	4.0 mm
<Wear limit>	<2 mm>
Shoe Spring free length	
Spring 1	57.0 mm
Spring 2	63.0 mm
Rear drum brake :	
Type	Leading, Trailing
Brake Drum inside diameter	130mm
<Wear limit>	<131>
Lining Thickness	4.0 mm
<Wear limit>	<2 mm>
Shoe spring free length	
Spring 1	52.0 mm
Spring 2	48.0 mm
Free Plays :	
Brake Lever free play (At lever end)	25 ~ 30 mm
Brake Pedal free play	20 ~ 30 mm
Clutch Lever free play (at lever end)	10 ~ 15 mm
Throttle Grip free play	3 ~ 7mm

TIGHTENING TORQUE (CHASSIS)

PARTS TO BE TIGHTENED	THREAD SIZE	TIGHTENING TORQUE		
		Nm	m.kg	ft.lb
Front Engine Stay and Mount	M 8 X 1.25	38	3.8	27.5
Front Engine Stay and Frame	M 10 X 1.25	55	5.5	40
Rear Engine Mount and Frame	M 8 X 1.25	38	3.8	27.5
Upper Engine Stay and Mount	M 8 X 1.25	38	3.8	27.5
Upper Engine Stay and Frame	M 8 X 1.25	38	3.8	27.5
Front Lower Engine Mount and Frame	M 8 X 1.25	38	3.8	27.5
Handle Crown and Inner Tube	M 8 X 1.25	23	2.3	17
Handle Crown and Steering Shaft	M 10 X 1.25	35	3.5	25
Under Bracket and Inner Tube	M 10 X 1.25	28	2.8	20
Steering Shaft and Ring Nut *	M 25 X 1.25	23	2.3	17
Handle Crown and Handle	M 8 X 1.25	23	2.3	17
Front Fender	M 6 X 1.0	7	0.7	5.1
Speedometer Cable and Speedometer	M 12 X 1.0	2.5	0.25	2
Handle Crown and Main Switch	M 6 X 1.0	13	1.3	9.4
Front Wheel Axle Nut	M 14 X 1.5	59	5.9	43
Rear Wheel Axle Nut	M 14 X 1.5	91	9.1	66
Wheel Sprocket and Clutch Hub	M 8 X 1.25	40	4.0	29
Tensioner Bar	M 8 X 1.25	19	1.9	14
Camshaft Lever	M 6 X 1.0	9.8	0.98	7.1
Fuel Cock	M 6 X 1.0	7	0.7	5.1
Ignition Coil	M 6 X 1.0	3.8	0.38	3
Battery Box	M 6 X 1.0	3.8	0.38	3
Rear Fender	M 6 X 1.0	3.8	0.38	3
Pivot Axle Nut	M 12 X 1.25	59	5.9	43
Rear Shock Absorber	M 10 X 1.25	40	4.0	29
Tension Bar and Rear Arm	M 8 X 1.25	19	1.9	14
Side Stand	M 8 X 1.25	25	2.5	18
Footrest and Frame	M 8 X 1.25	23	2.3	17
Footrest Mounting Lower	M 8 X 1.25	16	1.6	12

* Note :
1. First tighten the Ring Nut approximately 33 Nm (3.3 m.kg 25 ft.lb) by using the torque wrench then loosen the Ring Nut 1/4 turn.
2. Retighten the Ring Nut to specifications

ELECTRICAL

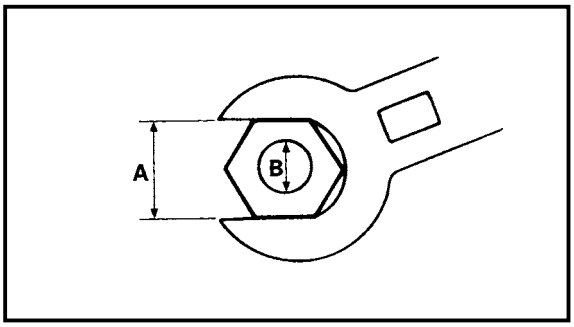
DESCRIPTION	SPECIFICATION
Voltage :	12V
Ignition system :	
Ignition timing (B.T. D. C)	7º ± 2º BTDC at 1400 rpm.
Advancer Type	Electrical type
CDI :	**Digitally Controlled**
Magneto model/manufacturer	5YY/DENSO
Sensor Coil (Color)	240 Ω ± 20%
CDI Unit Model/manufacturer	5KA/ Denso
IgnitionCoil :	
Model/Manufacturer	5YY/Wings Automobiles Pvt. Ltd.
Primary Coil Resistance	0.22 Ω ± 15%
Secondary Coil Resistance	3.0 KΩ ± 20%
Spark Plug Cap :	
Type	Resistance Type
Resistance	5 kΩ at 20 ºC (68ºF)
Charging System :	
Type	Flywheel Magneto
Flywheel Magneto :	
Model/Manufacturer	5YY/DENSO
Charging Voltage	14 ~ 15V @ 5000 RPM
Charging Coil Resistance	0.75 Ω ± 20% (68ºF)
Lighting :	
Lighting Voltage	14 V ± 0.5 @ 5000 RPM
Lighting Coil Resistance	0.62Ω ± 20 % (68ºF)
Rectifier/Regulator :	
Type	Semi conductor-Short Circuit Type
Model/Manufacturer	5YY/M/s Nappino Auto
No load regulated voltage	14.5 ± 0.5 V at 5000 rpm
Capacity	8A
Withstand voltage	400 V
Battery :	
Specific Gravity	1.230
Horn:	
Type	Plane type
Quantity	1 pc.
Model/Manufacturer	5YY/Local Made
Maximum Amperage	1.5 A
Flasher relay:	
Type	Semi transistor type
Model/Manufacturer	5KA3/Local Made
Self cancelling device	No
Flasher frequency	85 ± 15 cycles/min
Wattage	10W X 2

Circuit Breaker :	
Type	Fuse
Amperage for individual circuit X quantity :	
Main	10A X 1pc.
Reserve	10A X 1pc.

GENERAL TORQUE SPECIFICATIONS

This chart specifies torque for standard fasteners with standard I.S.O. pitch threads. Torque specification for special components or assemblies are included in applicable section of this book. To avoid warpage, tighten multi-fastener assemblied in a criss-cross fashion, in progressive stages, until full torque is reached. Unless otherwise specified, torque specifications call for clean, dry threads. Components should be at room temperature.

A (Nut)	B (Bolt)	General Torque specifications		
		Nm	m•kg	ft•lb
10 mm	6 mm	6	0.6	4.3
12 mm	8 mm	15	1.5	11
14 mm	10 mm	30	3.0	22
17 mm	12 mm	55	5.5	40
19 mm	14 mm	85	8.5	61
22 mm	16 mm	130	13.0	94



A : Distance across flats
B : Outside thread diameter

LUBRICATION POINTS AND LUBRICANT TYPE

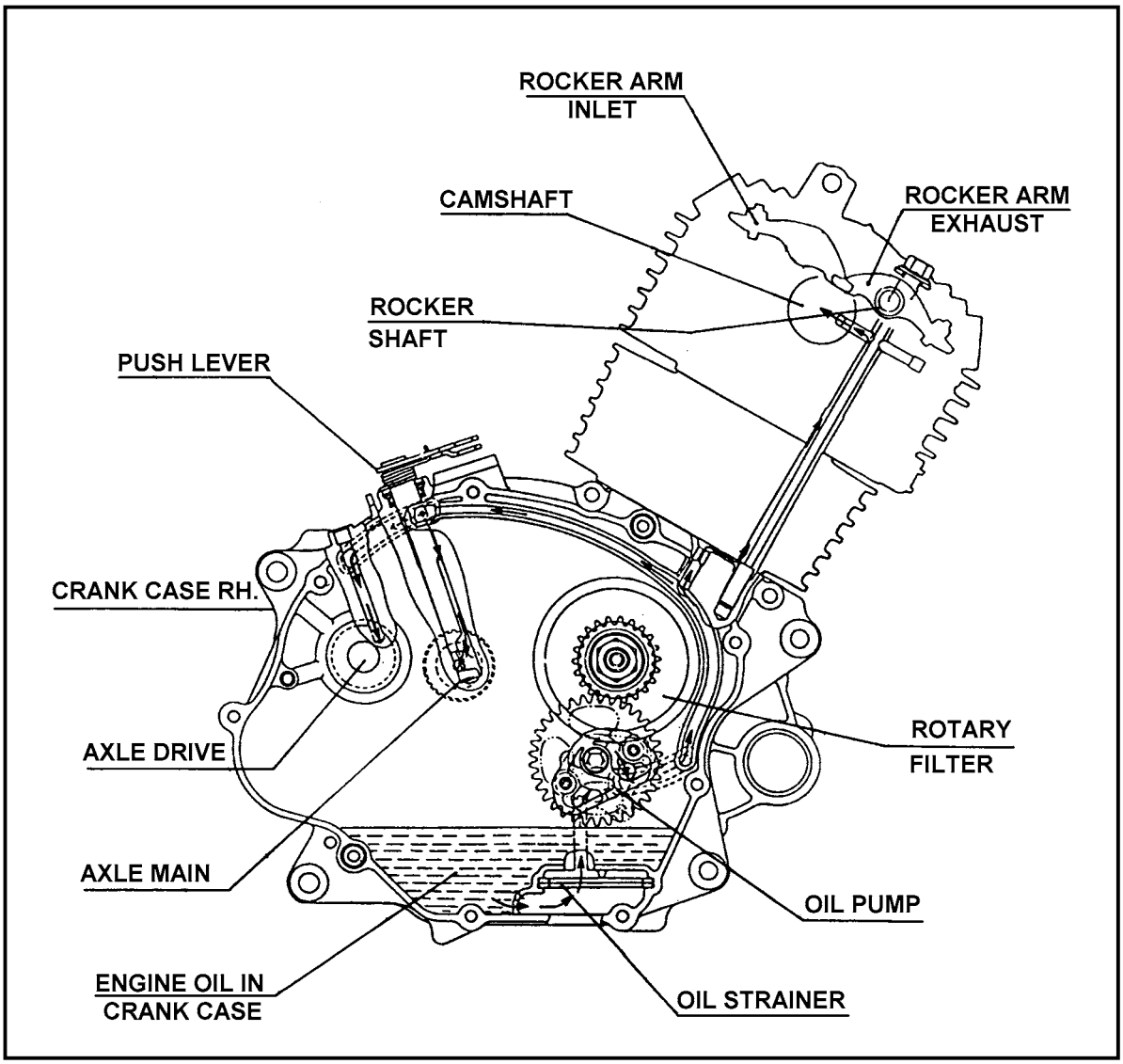
ENGINE	
Lubrication points (part name)	**Lubricant type**
Oil Seal lips (all)	LS
Bearing Retainer (all)	E
Bolt (Cylinder Head)	E
O-ring (Cylinder Head Side Cover and Valve Cover)	E
Crank Pin	E
Connecting Rod (big end)	E
Piston Pin	E
Valve Stem and Valve Guide	M
Oil Seal (Valve Stem End)	M
Rocker Arm Shaft and Rocker Arm	E
Cam and Bearing (Camshaft)	E
Push Rod	E
Primary Driven Gear and Main Axle	LS
Push Lever Axle	E
Rotary Filter and Oil Pump	E
Sliding Gear (Transmission)	M
Kick Axle Shaft	M
Axle Drive	E
Shift Fork and Guide Bar	E
Shift Cam and Bearing (shift cam)	E
Crankcase Mating Surfaces	Yamaha bond No. 1215
Crankcase Cover 1 and Grommet	Yamaha bond No. 1215

LUBRICATION POINTS AND LUBRICANT TYPE

SPEC 

CHASSIS	
Lubrication points (part name)	**Lubricant type**
Gear Unit (Gear Meter and Drive)	
Oil Seal Lips (all)	
Pivot Shaft (Swingarm)	
Pivoting Points (Brake Pedal Shaft and Frame)	
Ball and Ball Race (Steering Head)	
Tube Guide (Right Grip)	
Pivoting points (Brake Lever and Clutch Lever)	
Pivoting Point (Brake Shoe Plate)	
Cable End (Front Brake and Clutch)	
Pivoting Points (Sidestand Mainstand and Rear Footrest)	
Brake Camshaft (Cam and Shaft)	

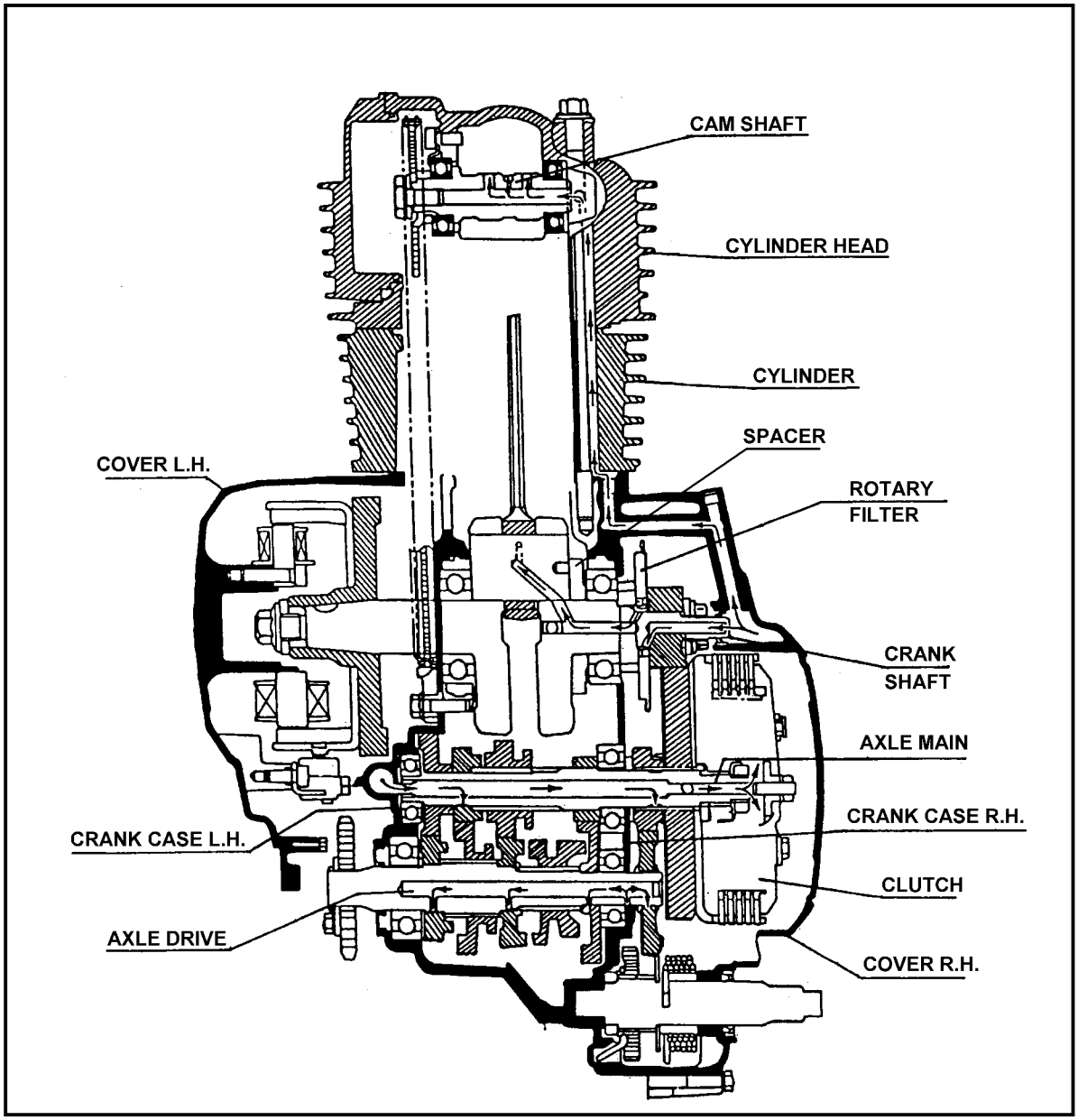
Engine Lubrication route



CAUTION:

DO NOT DAMAGE CRANK CASE SURFACES, OTHERWISE OIL LEAKAGE WILL START

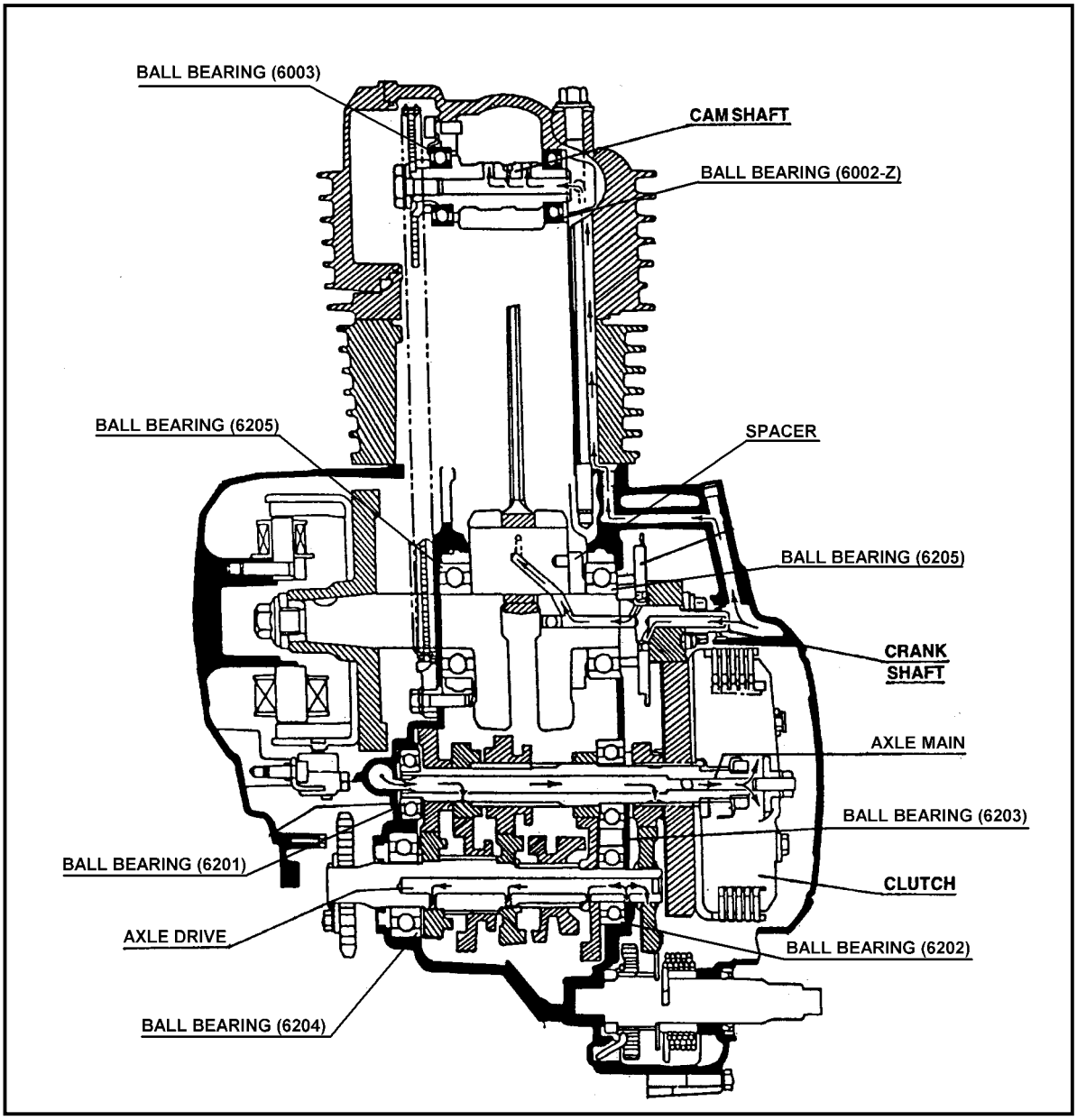
Engine Lubrication route



CAUTION:

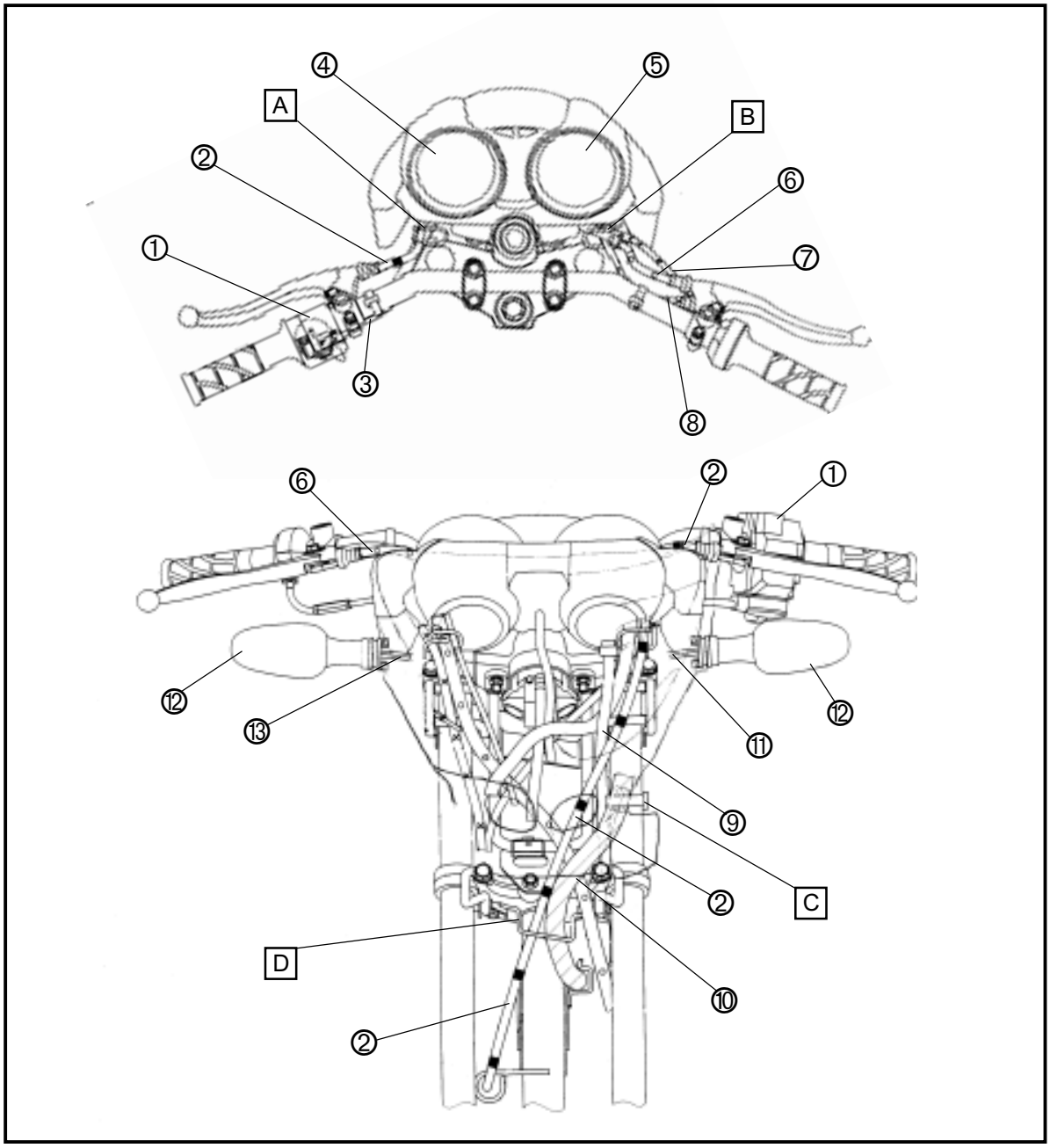
FOR IMPROVED PERFORMANCE, ALWAYS USE YAMALUBE OIL

ENGINE BEARINGS

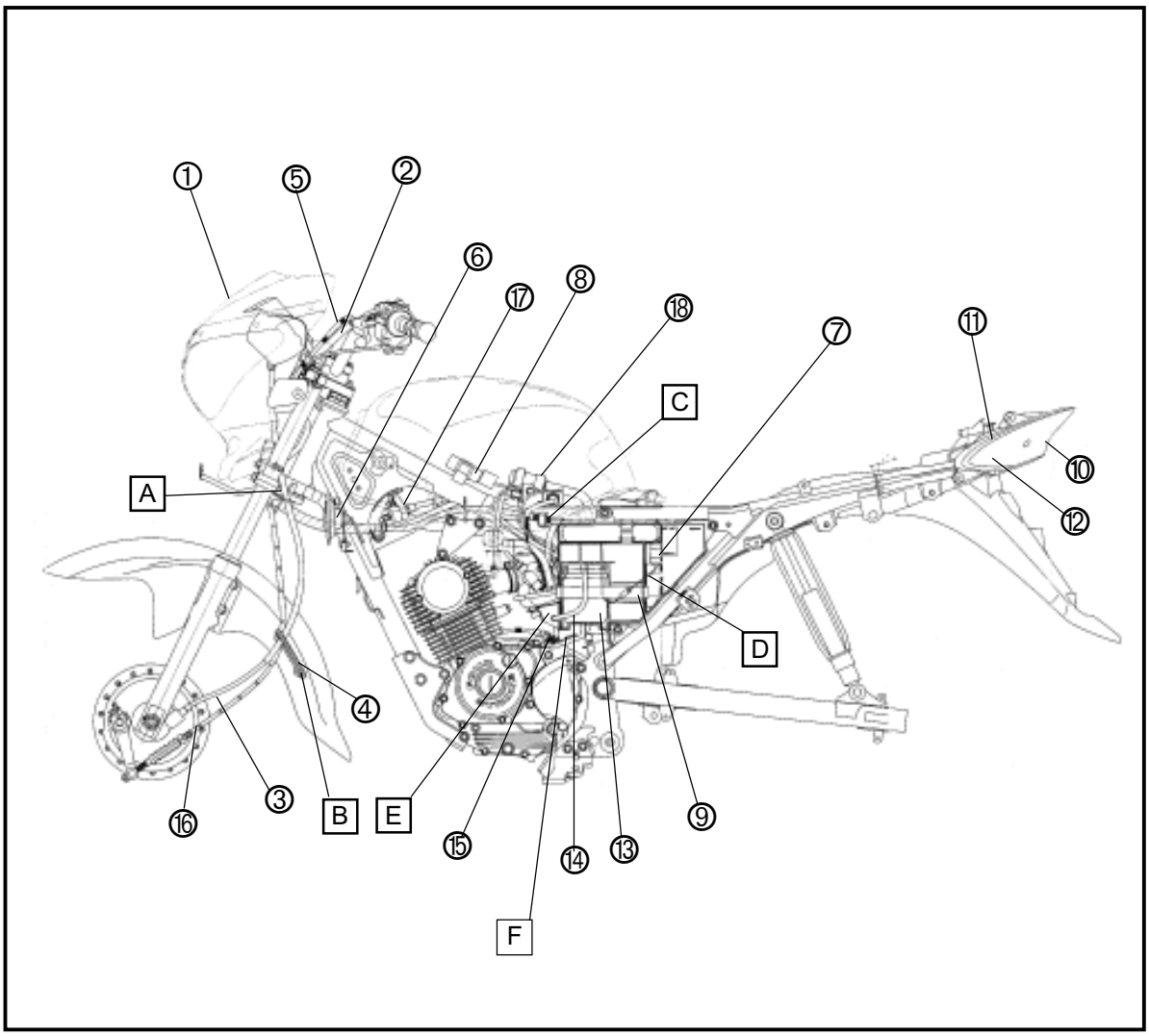


CABLE ROUTING

① Handlebar switch (left)
② Clutch cable
③ Starter Wire
④ Speedometer
⑤ Tachometer
⑥ Brake Cable front
⑦ Throttle cable
⑧ Brake switch lead
⑨ Speedometer cable
⑩ Wireharness
⑪ Flasher light lead (left)
⑫ Flasher Light
⑬ Flasher light lead (right)
[A] Pass the Clutch Cable ②, Starter wire ③ and Handle-bar Switch Lead through the cable guide of the left side.
[B] Pass the Throttle Cable ⑦, and the Brake Cable ⑥ and the Front Brake switch lead ⑧ through the Cable Guide of the right side.
[C] Clamp Wireharness ⑩ and front fork.
[D] Pass the Wireharness ⑩ and Clutch Cable ②.



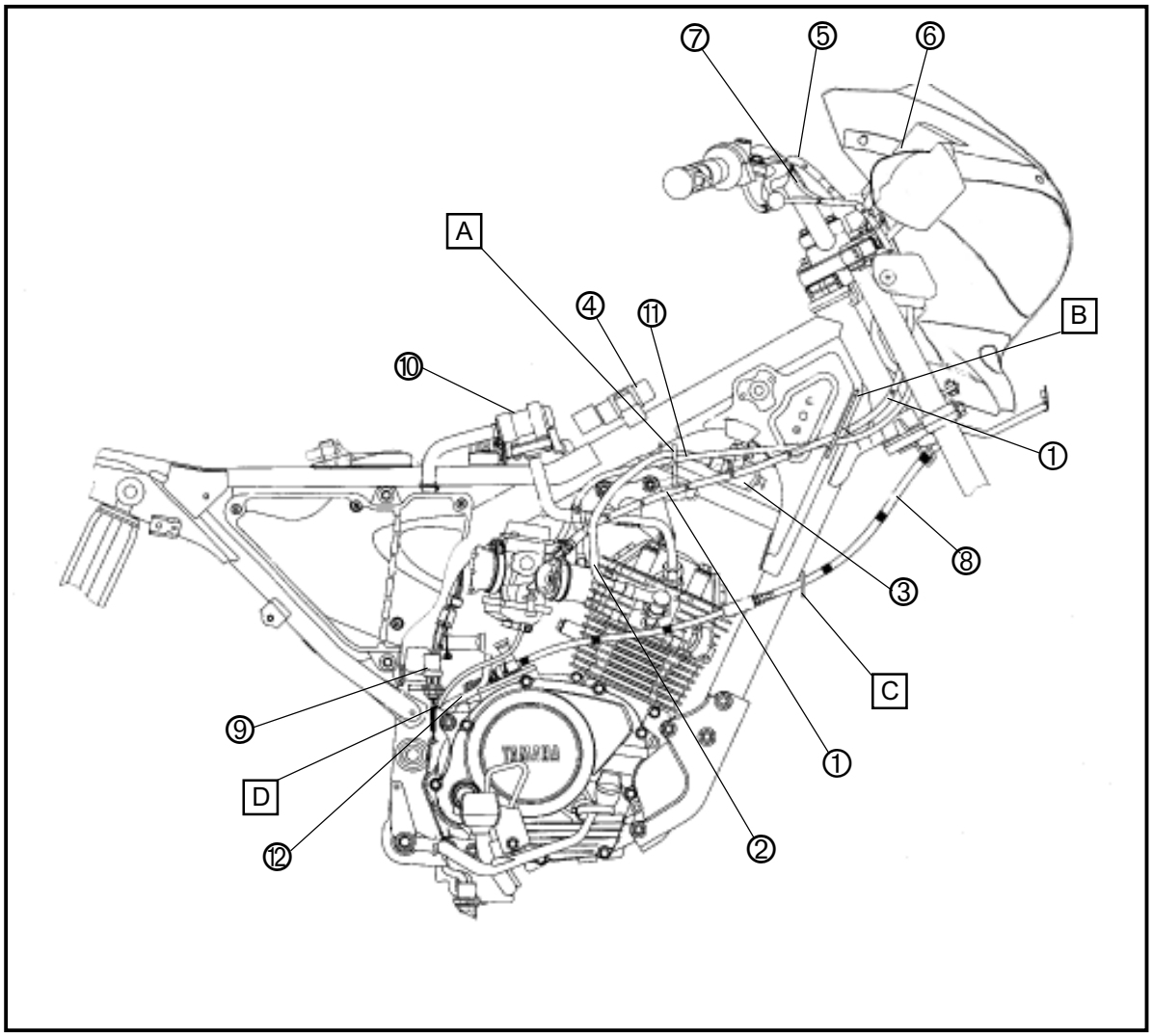
① Headlight assembly
② Handlebar switch lead
③ Speedometer cable
④ Cable guide
⑤ Clutch cable
⑥ Horn
⑦ Fuse
⑧ CDI unit
⑨ Clamp Battery
⑩ Stop/tail light
⑪ Flasher light lead (LH)
⑫ Flasher light
⑬ Battery
⑭ Battery breather hose
⑮ Neutral switch lead
⑯ Brake Cable
⑰ H.T. Coil
⑱ Air Induction system
[A] Pass the wireharness through the cable guide.
[B] Pass the speedometer cable ③ and front brake cable ⑯ through the Cable Guide.
[C] Align the white marking of Wireharness with the frame clamp
[D] Connect the battery negative (-) lead and positive (+) lead with the wireharness.
[E] Pass the battery breather hose ⑭ through the hole of the lower left side of the Battery Box
[F] Pass the magneto lead to the outside of the flange of the chain cover.



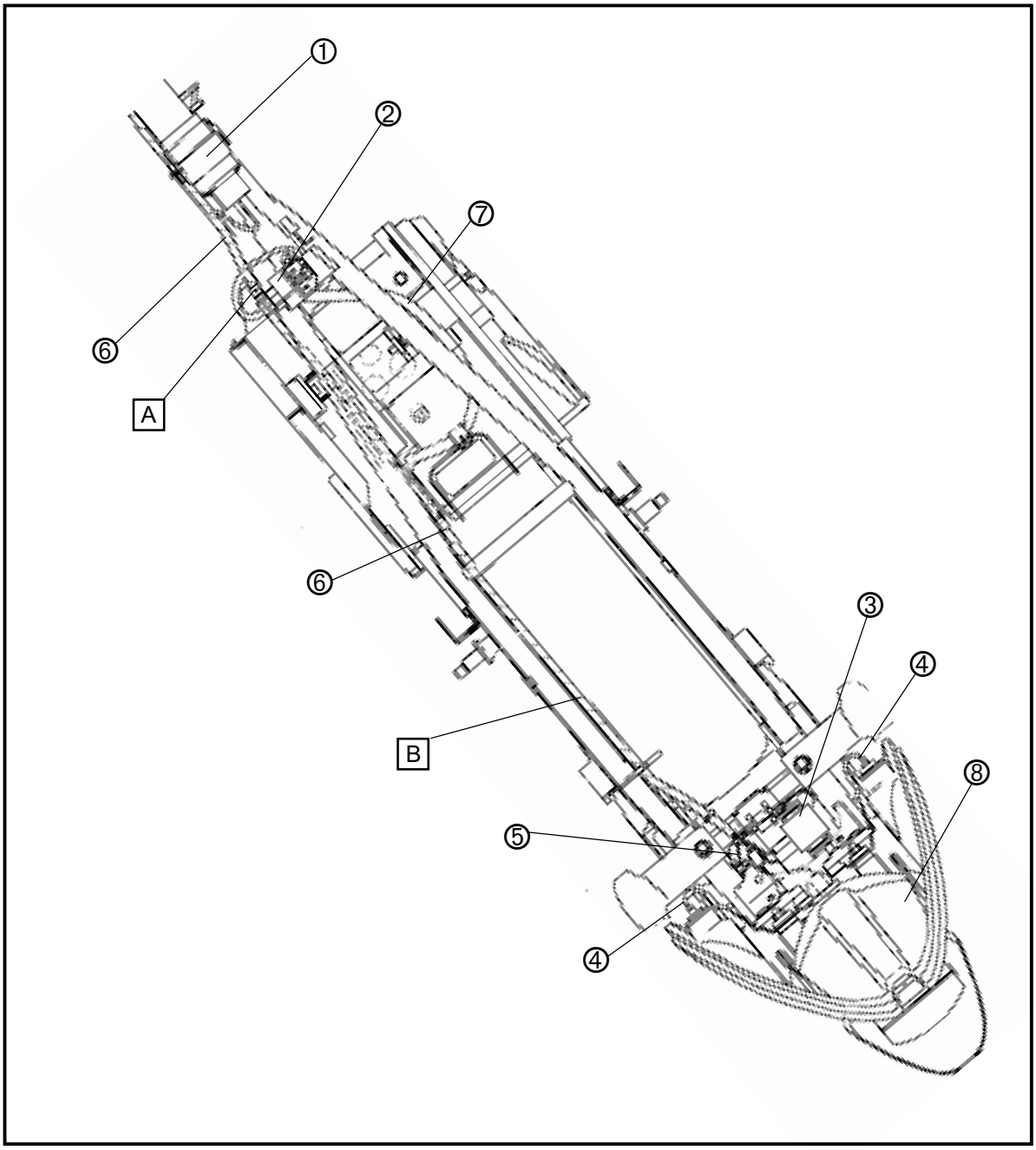
CABLE ROUTING

① Throttle cable
② High tension cord
③ Ignition Coil
④ Band - C.D.I.
⑤ Brake cable front
⑥ Speedometer
⑦ Brake switch lead
⑧ Clutch cable
⑨ Rr Brake Switch
⑩ A.I.S. Unit
⑪ Starter wire
⑫ Carburettor Breather Pipe

A Pass the high tension cord ② through the cable guide and starter wire.
B Pass the throttle cable ① and starter wire ⑪ through cable guide.
C Pass the clutch cable ⑧ through cable guide.
D Pass breather hose through upper right side hole of frame bracket engine.



① C.D.I. Unit
② Rectifier regulator
③ Flasher relay
④ Flasher light lead
⑤ Stop/tail light lead
⑥ Wireharness
⑦ Carburettor Air Vent
⑧ Tail Light Assembly
A Clamp the Wire Harness lead.
B Pass the Wire Harness between Frame and Rear Fender



CHAPTER 3

PERIODIC INSPECTION AND ADJUSTMENTS

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INTRODUCTION

This chapter includes all information necessary to perform recommended inspections and adjustments. These preventive maintenance procedures, if followed, will ensure more reliable Motorcycle operation and a longer service life. The need for costly overhaul work will be greatly reduced. This information applies to Motorcycles already in service as well as to new Motorcycles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

PERIODIC MAINTENANCE/LUBRICATION INTERVALS

S. NO.	ITEM	OPERATION	SERVICES						
			FREE			PAID			EVERY 2000 km
			I	II	III	IV	V	VI	
1	VALVES	Check valve clearances, adjust if necessary	●	●	●	●	●	●	●
2	SPARK PLUG	Check condition, gap	●	●	●	●	●	●	●
		Clean and reset if necessary / Replace	Every 10,000 kms						
3	CARBURETOR	Do not open butterfly slide valve screws. Check idle speed, Starter Lever operation. Tune if necessary. Don't open/Tamper T.P.S.	●	●	●	●	●	●	●
4	*AIR FILTER	Clean, inspect & lubricate.(replace if necessary)	●	●	●	●	●	●	●
5	FUEL LINE	Check Fuel Hose, for cracks or damage. Replace in necessary.	●	●	●	●	●	●	●
6	FUEL FILTER	Check for free flow of petrol cleanliness of bowl/filter, Replace in necessary	●	●	●	●	●	●	●
7	ENGINE OIL	with recommended oil (Warm engine before draining) - YAMALUBE	●	●	●	●	●	●	●
8	OIL STRAINER	Wash with petrol.	●	●	●	●	●	●	●
9	BRAKE-FRONT & REAR	Checkoperation/Adjust in necessary. Grease the brake cam.	●	●	●	●	●	●	●
10	BRAKE SHOES FRONT & REAR	Check for wear, replace in necessary.	●	●	●	●	●	●	●
11	CLUTCH	Check alignment marks on Push Lever and Crankcase L.H. Adjust if necessary.	●	●	●	●	●	●	●
12	REAR ARM PIVOT	Check Rear Arm assembly for looseness. Tighten with specified torque if necessary / Repack grease	●	●	●	●	●	●	●
			Every 10,000 kms						
13	WHEELS	Check runout, Spoke tightness, damage; Correct it if necessary.	●	●	●	●	●	●	●
14	WHEEL BEARING	Check Bearing assembly fo looseness, damage;	●	●	●	●	●	●	●
		Repack grease	Every 10,000 kms						
15	STEERING RACE BALL	Check Race Ball Assy. for loosness, Tighten/ Replace if necessary. / Repack grease	●	●	●	●	●	●	●
			Every 10,000 kms						
16	FRONT FORK	Check operation/oil leakage, Repair if necessary.	●	●	●	●	●	●	●
		Replace Oil	Every 10,000 kms						
17	REAR SHOCK ABSORBER	Check operation/oil leakage, Replace if necessary.	●	●	●	●	●	●	●

PERIODIC MAINTENANCE/LUBRICATION INTERVALS

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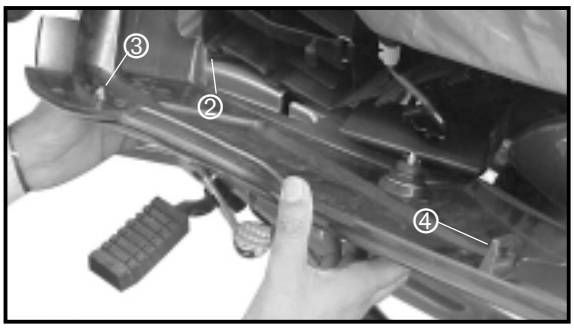
S. NO.	ITEM	OPERATION	SERVICES						
			FREE		PAID				EVERY 2000 km
			I	II	III	IV	V	VI	
18	DRIVE CHAIN	Check chain stack, alignment, adjust if necessary Clean and lubricate.	●	●	●	●	●	●	●
19	NUTS, BOLTS AND FASTENERS	Check all Chassis fittings and fasteners for looseness. Tighten as per specification.	●	●	●	●	●	●	●
20	CENTER STAND AND SIDE STAND	Check operation and lubricate if necessary.	●	●	●	●	●	●	●
21	BATTERY	Check electrolyte level and top it up with distilled water if necessary. Check specific gravity. Check Breather Pipe for blockage and routing	●	●	●	●	●	●	●
			EVERY MONTH						
22	CONTROL CABLES - THROTTLE - CLUTCH - FRONT BRAKE	Check operation, free play, Cable damage. Readjust or replace as required	●	●	●	●	●	●	●

It is recommended that above be serviced by authorised YAMAHA MOTOR INDIA PRIVATE LIMITED dealer *Service more frequently when the vehicle is driven in dusty areas.

SIDE COVERS, SEAT AND FUEL TANK



REMOVAL SIDE COVER (LH)

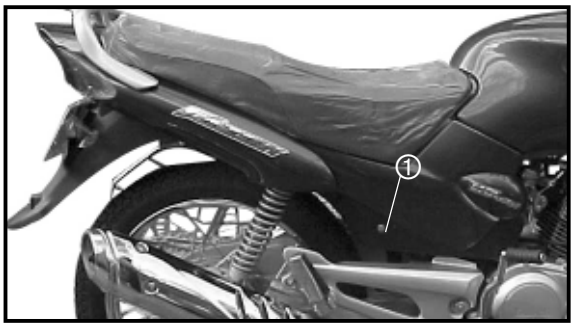
1. Remove
   • Side Cover (LH)

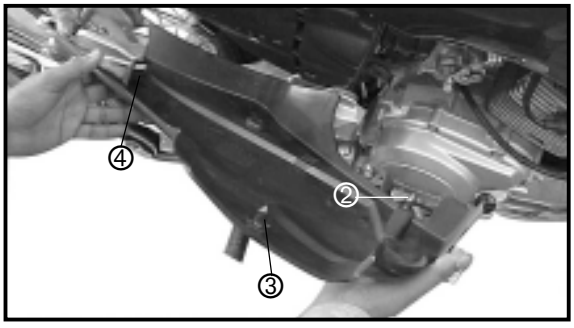
****

Removal steps :

- Open the Lock ① using Main Switch Key.
- Pull the Lug ② / Lug ③ towards you to remove it from the Fuel Tank.
- Slide the Side Cover towards the front side of the Motorcycle for removing the Lug ④ from the Chassis.

****





REMOVAL SIDE COVER (RH)

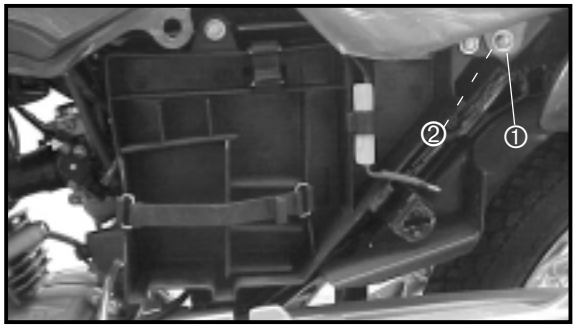
1. Remove
   • Side Cover (RH)

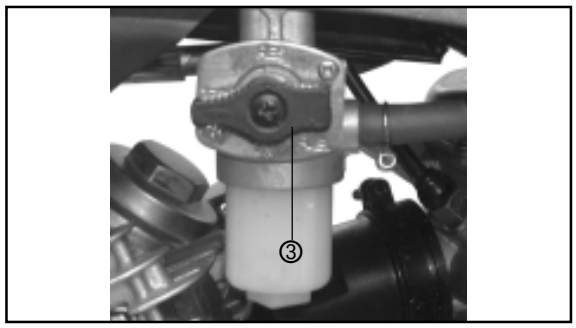
****

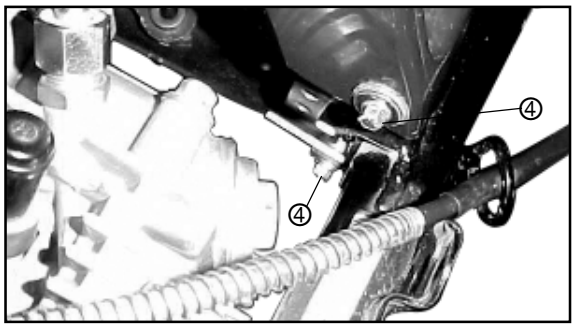
Removal steps :

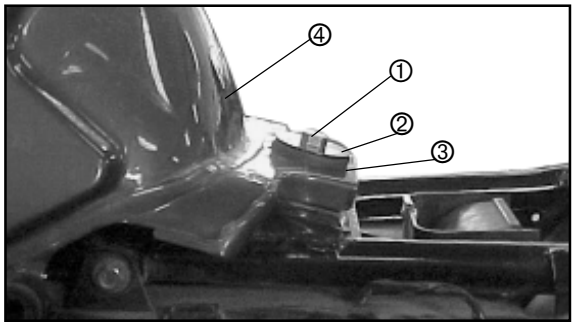
- Remove the Screw ①
- Pull the lug ② / Lug ③ towards you to remove it from the Fuel Tank.
- Slide the Side Cover towards the front side of the Motorcycle for removing the lug ④ from the chassis

****









REMOVAL SEAT

1. Remove
   - Side Cover LH and RH
   - Bolts 2 Nos - Bolts ① and ② from LH/RH side
   - Seat

****

Removal steps :

- Open bolts ① and ② inside the side covers.
- Lift the front of the Seat and slide it forward.

⚠WARNING

- **Gasoline is highly flammable.**
- **Avoid spilling of fuel on the hot Engine.**

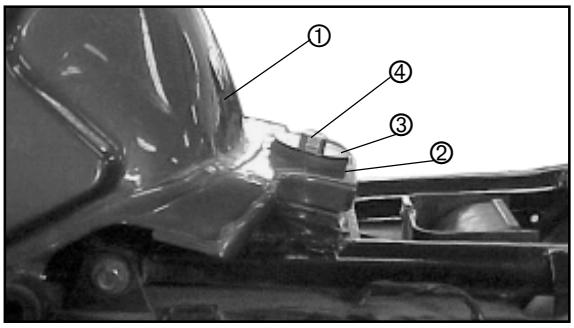
REMOVAL FUEL TANK

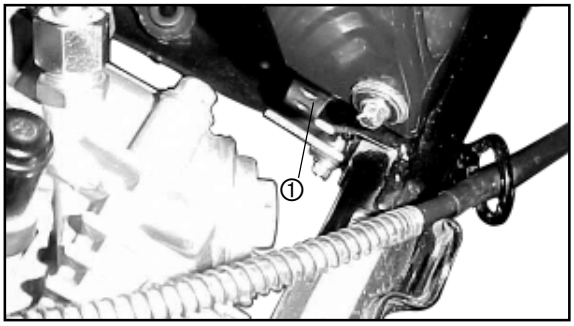
1. Disconnect
   - Fuel Hose
   - Scoop Bracket - 2 Nos Bolts ④

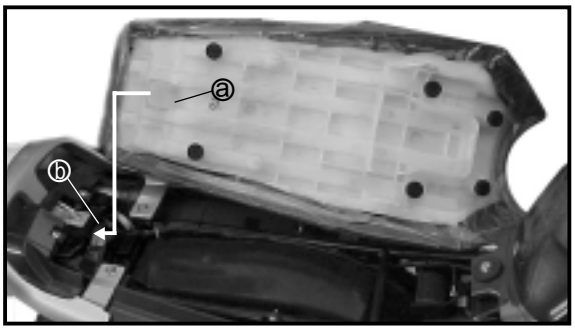
NOTE :

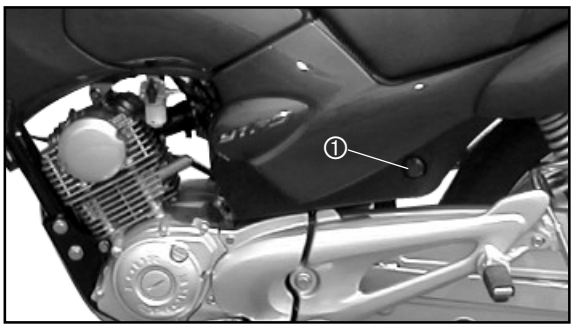
- Position the Fuel Cock Lever ③ to the 'OFF', disconnect the Fuel Hose.
- Place a rag cloth under the Fuel Line to absorb any spilt fuel.

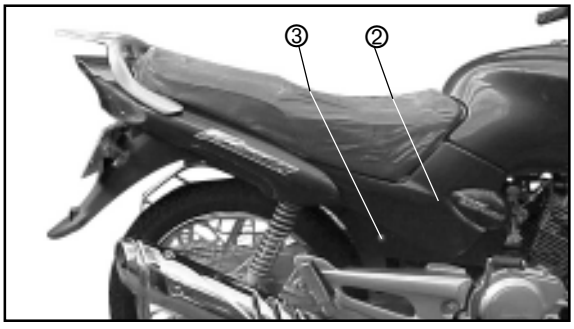
2. Remove
   - Bolt (Fuel Tank) ①
   - Plate ②
   - Damper Rubber ③
   - Fuel Tank ④











INSTALLATION

Reverse the REMOVAL procedure.
Note the following points.

1. Install
   - Fuel Tank ①
   - Damper Rubber ②
   - Plate ③
   - Bolt ④
   - Fuel Hose

	Bolt (fuel tank) **20 Nm (2.0 mkg; 14.4 ft.lb)**

NOTE :

- Keep the projection on plate ③ downward.

2. Install
   - Scoop Bracket ①
   - Bolts - 2 Nos.

3. Install
   - Seat
   - Bolts - 2 Nos.

NOTE :

- Insert the projection ⓐ on the rear of the seat into the respectable ⓑ on the Chassis, then push down front of the seat and tighten the bolts.

	Bolt (Seat) **3.8 Nm (0.38 mkg, 3.0 ft.lb)**

4. Install
   - Side Cover (LH) ① and lock with Key

5. Install
   - Side Cover (RH) ②

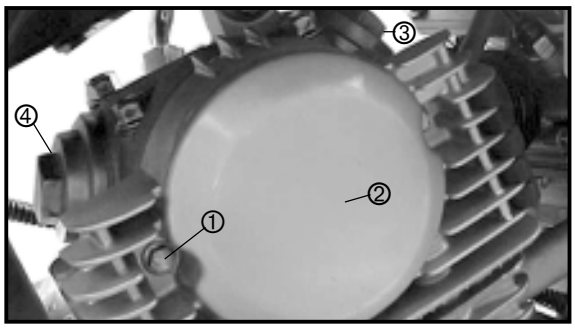
6. Tighten
   - Screw ③

VALVE CLEARANCE CHECKING AND ADJUSTMENT

NOTE :

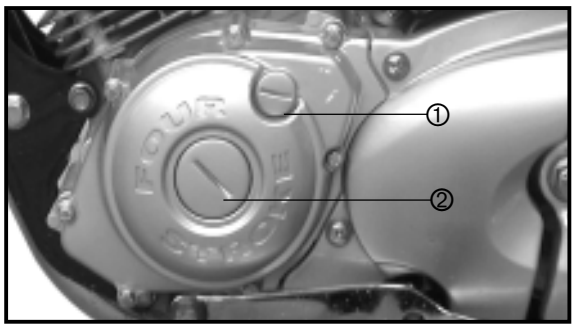
Valve clearance checking and adjustment should be made with the Engine in cold condition, at room temperature.

When the Valve clearance is to be measured or adjusted, the Piston must be at Top Dead Center (T.D.C.) on the compression stroke and marking on Cam Sprocket should be aligned with the marking on Cylinder Head.

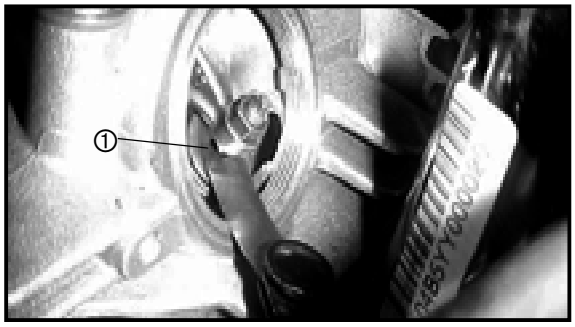


1. Remove :
   - Side Covers
   - Seat
   - Fuel Tank

   Refer to “SIDE COVERS, SEAT AND FUEL TANK” section Page no 3-3



2. Remove :
   - Spark Plug
   - Bolts (Cylinder Head Side Cover) ① 2 Nos
   - Cylinder Head Side Cover ②
   - Valve Cover - Intake ③/ Exhaust side ④



3. Remove :
   - Timing Check Plug (with O-ring) ①
   - Center Plug (with O-ring) ②

4. Measure :
   - Valve clearance (Intake and Exhaust) ① using Feeler Gauge

     Out of specification ➔ Adjust.

	Feeler Gauge : **YSST - 615**

	Valve clearance (cold) **Intake : 0.08 ~ 0.12 mm** **Exhaust : 0.10 ~ 0.14 mm**

VALVE CLEARANCE CHECKING AND ADJUSTMENT

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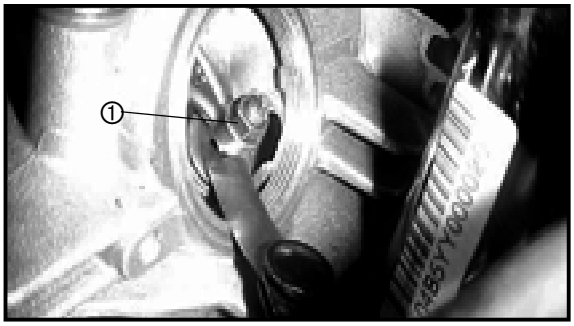

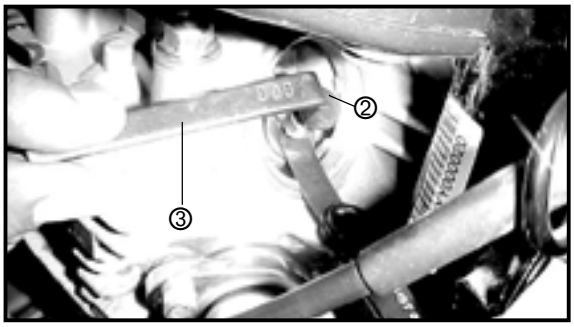

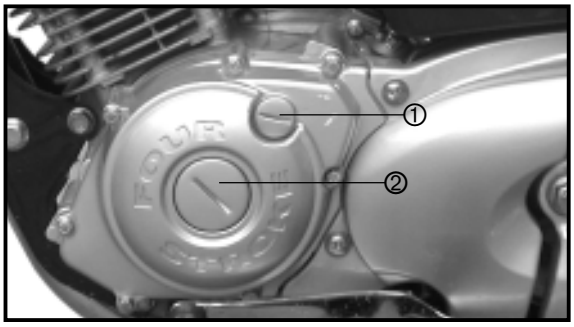

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Checking steps :

Measurement steps :

- Rotate the Crankshaft anticlockwise to align the slit ⓐ third mark on the rotor with the stationary pointer ⓑ on the Crankcase Cover LH when the Piston is at Top Dead Center (T.D.C.) and in compression stroke.
- Measure the Valve clearance by using a feeler gauge.

	Feeler Gauge **YSST 615**

Out of specification ➔ Adjust clearance.

****

5. Adjust :
   - Valve clearance

****

Adjustment steps :

- Loosen the Locknut ①
- Turn the Adjuster ② in or out with the Valve adjusting tool ③ until specified clearance is obtained.

	Valve adjusting tool : **YSST - 606**

Turning in ➔Valve clearance is decreased.
Turning out➔Valve clearance is increased.

- Hold the Adjuster to prevent it from moving and tighten the Locknut.

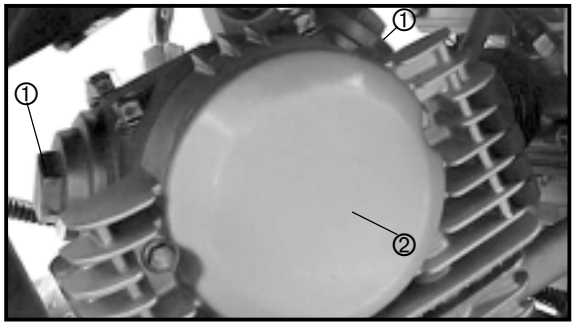
	Locknut : **8 Nm (0.8 m • kg, 5.8 ft • lb)**

- Measure the Valve clearance.
- If the clearance is incorrect, repeat above steps until specified clearance is obtained.

****

6. Install
   - Timing Check Plug (with O-ring) ①
   - Center Plug (with O-ring) ②

IDLING CO. MEASUREMENT AND ADJUSTMENT



7. Install
   - Valve Covers (with O-ring) ①
   - Spark Plug
   - Cylinder Head Side Cover ②

Valve cover (intake and exhaust) : 17.5 Nm (1.75 m kg, 13 ft-lb)
Bolts (cylinder head side cover) : 10 Nm (1.0 m kg, 7.2 ft-lb)

8. Install
   - Seat
   - Side Covers
   - Fuel Tank

   Refer to the "SIDE COVERS, SEAT AND FUEL TANK" section Page no 3-3

IDLING CO. MEASUREMENT AND ADJUSTMENT

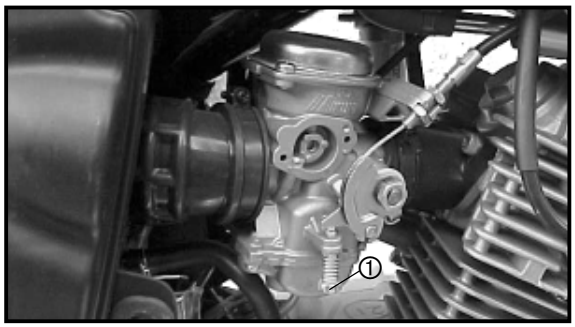
1. Start the Engine and let it warm up by running the Motorcycle approx. 3~4 kms.
2. Attach :
   - Inductive Tachometer to the Spark Plug Lead.

Tachometer : YSST - 613

3. Check :
   - Engine idling speed (standard)

     Out of specification ➔ Adjust.

     Turn the Throttle Stop Screw ① in or out until specified idling speed is obtained.

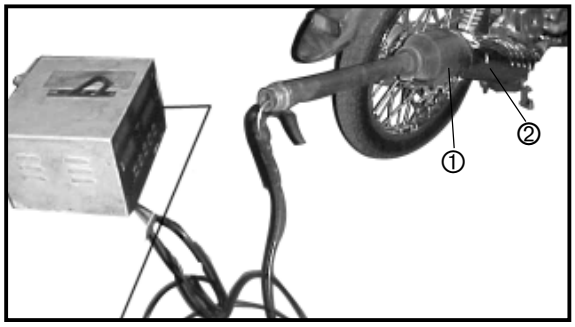


Turning IN ➔ Increase in rpm
Turning OUT ➔ Decrease in rpm

Engine idling speed : 1,300 ~ 1,500 r/min

NOTE :

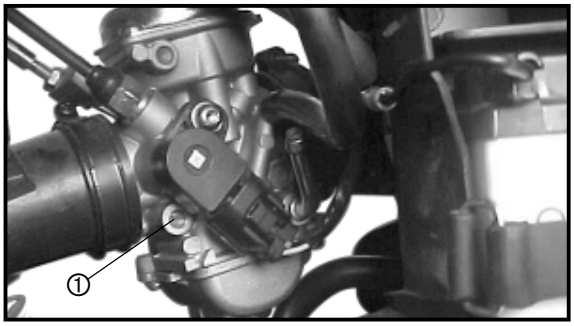
Before checking Engine idle RPM always check throttle cable free movement and free play.



4. Insert :
   - Sampling probe ① (CO. tester) to the exhaust pipe ②

CO.concentration : 2.5% ± 1.5 V/V

Out of specification ➔ Adjust.



5. Adjust :
   • 'CO' concentration

****

Adjustment steps :

• Turn the pilot screw ① in or out until the specified 'CO' concentration is obtained.

Turning in ➔ 'CO' concentratin decreases
Turning out ➔ 'CO' concentration increases

NOTE :

For adjusting the Engine idling speed use the throttle stop screw ②. Do not adjust Engine Idle RPM by using the Pilot Screw.

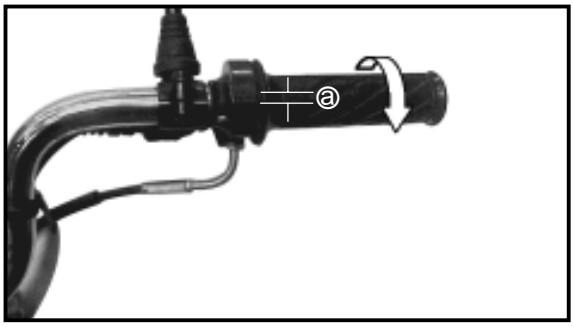
• After adjusting, 'CO' concentration as specified, remove the 'CO' tester, make sure that the Engine idling speed has not changed.

****

THROTTLE CABLE ADJUSTMENT

NOTE :

Prior to adjusting the Throttle Cable free play, the Engine idling speed should be adjusted.



1. Check :
   • Throttle cable free play ⓐ
     Out of specification ➔ Adjust.

	Free play : 3 ~ 7 mm **At Throttle Grip flange**

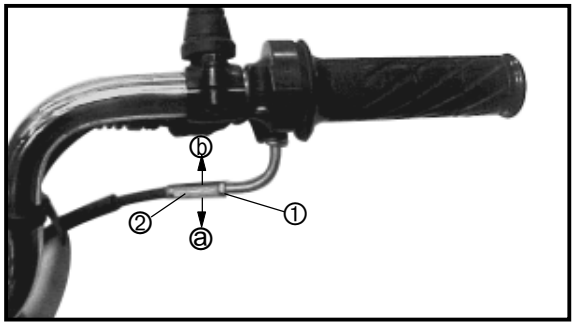
2. Adjust :
   • Throttle Cable free play

****

Adjustment steps :

NOTE :

Never accelerate the Throttle when stopping the Engine.



- Loosen the Locknut ① on the Throttle Cable.
- Turn the Adjuster ② in or out until the specified free play is obtained.

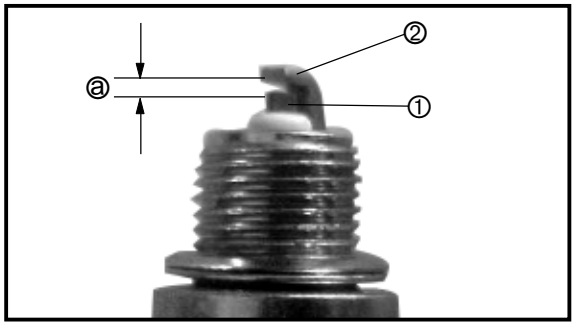
Turning IN ⓐ ➔ Free play is increased.
Turning OUT ⓑ ➔ Free play is decreased.

- Tighten the locknut ①.

⚠WARNING

After adjusting, turn the Handlebar to the right and to the left to ensure that this does not cause the Engine idling speed to change.

SPARK PLUG INSPECTION



1. Remove :
   - Spark Plug Cap
   - Spark Plug

CAUTION:

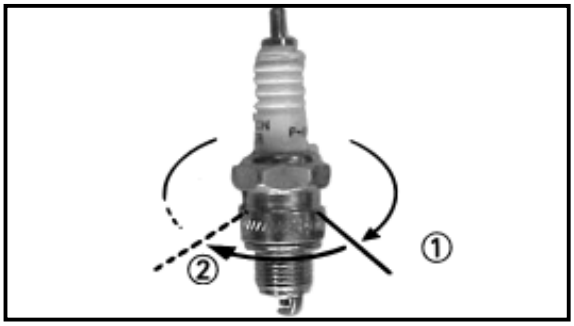
Before removing the Spark Plug, use compressed air to blow away any dirt accumulated in the Spark Plug wells to prevent it from falling into the Cylinder.

2. Check :
   - Spark Plug Type / Number
     Incorrect ➔ Replace

Standard Spark Plug :
R-CR7 HSA - NGK

3. Inspect :
   - Center Electrode ①
     Wear/damage ➔ Replace Spark Plug.
   - Ground Electorde ②
     Abnormal color ➔ Replace Spark Plug.
     Normal color is medium-to-light tan color
4. Clean :
   - Spark Plug
     (with Spark Plug cleaner or wire brush)
5. Measure :
   - Spark Plug gap ⓐ
     (with a wire gauge)
     Out of specification ➔ Adjust gap.

Spark Plug Gap:
0.6 ~ 0.7 mm

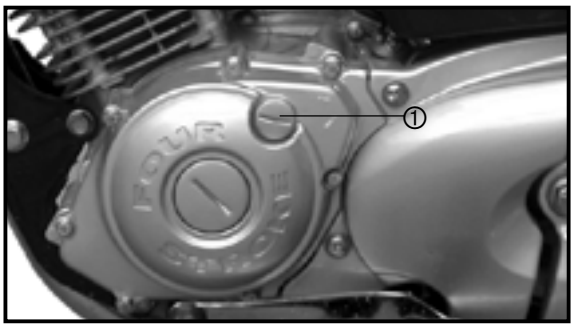


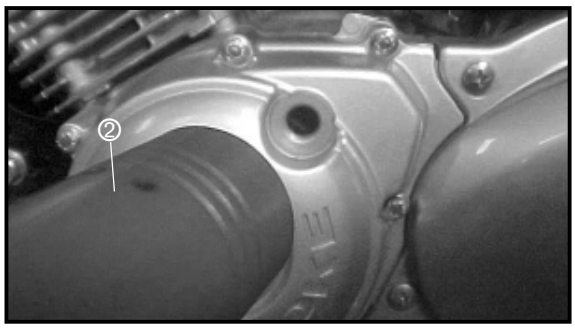
6. Install :
   • Spark Plug

Spark Plug :
12.5 Nm (1.25 mkg, 9 ftlb)

NOTE :

- Before installing a Spark Plug, clean the Gasket surface and Plug surface.
- If a Torque Wrench is not available, a good estimate of the correct tightening torque is to finger tighten ① the Spark Plug and then tighten it another 1/4 to 1/2 turn to ② using Box Spanner





IGNITION TIMING CHECKING PROCEDURE :

NOTE :

Prior to checking the ignition timing, check all electrical connections related to the starting system. Make sure that all connections are intact.

1. Remove :
   • Plug Straight Screw ①
2. Attach :
   • Timing light ②

Timing light
SKC (S14-121) or any standard brand
Engine tachometer
YSST - 613

IGNITION TIMING CHECKING PROCEDURE

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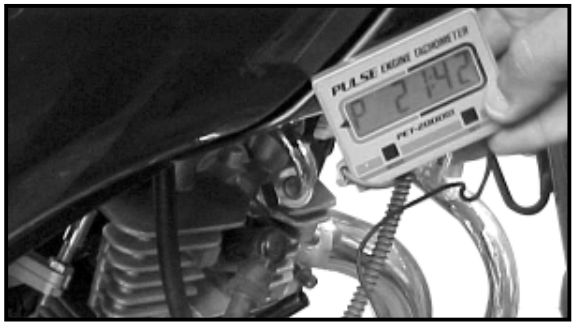
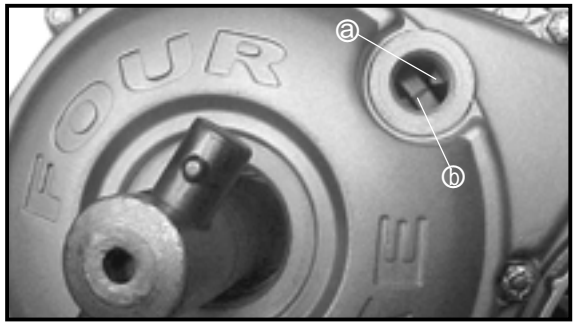
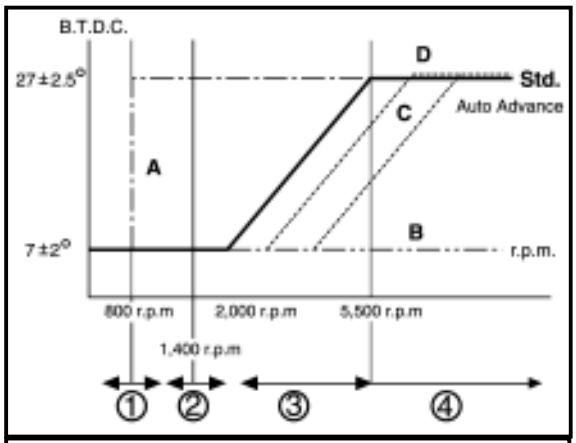






A : Auto Advance reverse circuit not working
B : Auto Advance not working
C : Delay Auto Advance
D : STD Auto Advance working
①②③④ Different stages of RPM

3. Check :
   • Ignition timing

****

Checking steps :

- Start the Engine and let it warm up for several minutes or run the Motorcycle for approx. 4 kms.
- Maintain the Engine idling speed

Engine idling speed :
1,300 ~ 1,500 r/min

- Confirm that the stationary pointer on LH Crankcase Cover ⓐ falls within the ignition timing range ⓑ marked on Rotor Assembly.

NOTE :

Ignition timing is not adjustable.

4. Check
   • Auto advance mechanism

****

Checking steps

- Increase the Engine speed from 1400 r/min to 2250 r/min
- Check the stationery pointer ⓐ should be within the ignition timing range ⓑ marked on the Rotor Assembly
- Further increase the Engine speed from 2250 r/min onwards.
- Observe that Rotor ignition timing mark moves in clockwise direction gradually and later not visible.
- If above phenomenon is not observed it confirms that the CDI unit is defective (Auto Advance mechanism not working)

****

5. Install :
   • Plug straight screw (with O-ring)

COMPRESSION PRESSURE MEASUREMENT

COMPRESSION PRESSURE (With oil applied into cylinder)	
Reading	Diagnosis
Higher than without oil	Worn or damaged piston
Same as without oil	Possible defective ring(s),Valves,Cylinder head Gasket or Piston ➔ Repair.

COMPRESSION PRESSURE MEASUREMENT

NOTE :

Insufficient compression pressure will result in performance loss.

1. Check :
   • Valve clearance
   Out of specification ➔ Adjust.
   Refer to "VALVE CLEARANCE ADJUSTMENT" section. Page no 3-6
2. Start the Engine and let it warm up for several minutes.
3. Turn off the engine.
4. Remove :
   • Spark Plug
5. Attach:
   • Compression gauge ①

Compression Gauge :

6. Measure :
   • Compression pressure
   If it exceeds the maximum pressure allowed ➔ Inspect the Cylinder Head, Valve surfaces and Piston Crown for carbon deposits.
   If it is below the minimum pressure ➔ Squirt a few drops of oil into the affected cylinder and measure again.

Follow the table

Compression pressure :
(at sea level)
Standard : 1200 kPa (12 Kg/cm²)
Minimum : 1040 kPa (10.4 Kg/cm²)

****

Measurement steps:

• Crank the Engine with the Throttle wide open until the reading on the compression gauge stabilizes.

⚠WARNING

Before cranking the engine, ground Spark Plug leads to prevent sparking

****

7. Install :
   • Spark plug

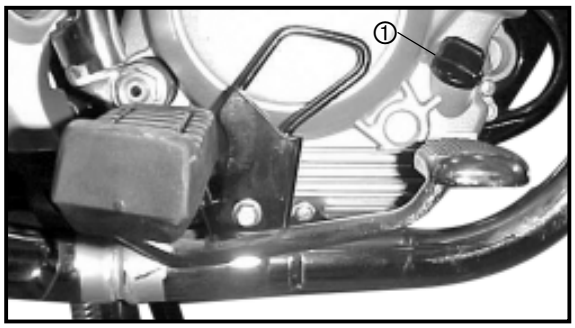
8. Install :
   • Fuel tank
   • Seat
   • Side covers
   Refer to “SIDE COVERS, SEAT AND FUEL TANK” section Page no 3-3

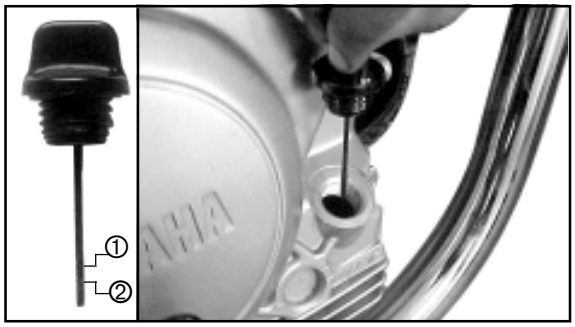
ENGINE OIL LEVEL INSPECTION

1. Stand the Motorcycle on a level surface using the Center Stand.

NOTE:

Make sure the Motorcycle is upright when inspecting the oil level.





2. Start the Engine and let it warm up for a few minutes.
3. Turn off the Engine.
4. Remove the Dip Stick ① (oil level gauge). Wipe off the Dip Stick (oil level gauge) using a clean cloth and rest it on the threads of oil filler hole. Then remove the Dip Stick (Oil Level Gauge)
5. Inspect:
   • Engine oil level
   Oil level should be between maximum ① and minumim ② marks.
   Oil level is below the minimum mark ➔ Add oil up to the proper level.

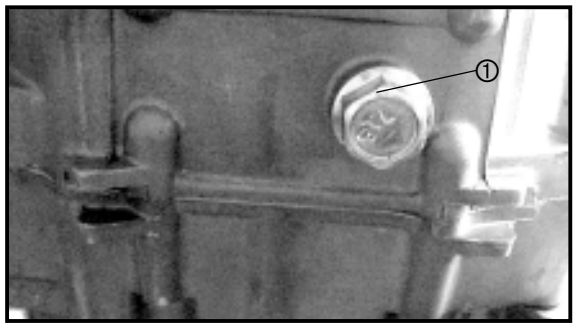
RECOMMENDED ENGINE OIL

	YAMALUBE (20W40) **SG grade.**

NOTE :

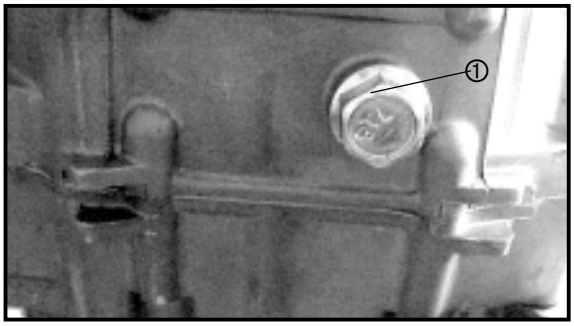
Wait a few minutes until the oil settles before inspecting the oil level.

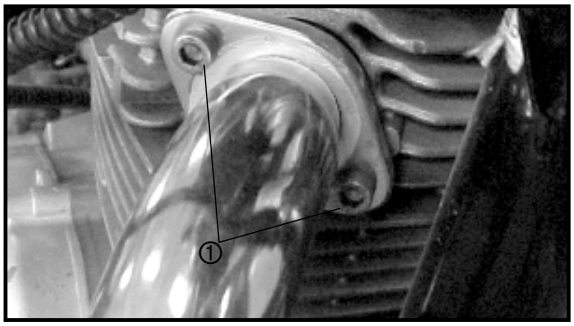
ENGINE OIL REPLACEMENT

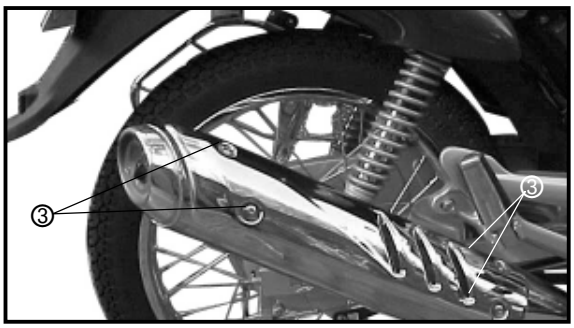


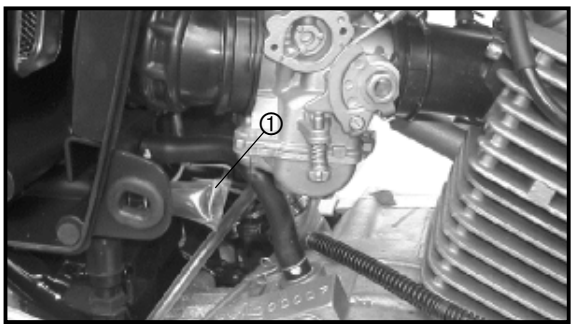
1. Start the Engine and let it warm up for several minutes or drive approx 4 Kms.
2. Turn off the Engine and place an oil pan under the Engine.
3. Remove :
   • Dip stick (oil level gauge)
   • Drain plug ①
   • Gasket

Drain the oil from the Crankcase.









4. Install :
   • Drain plug ① with Washer

	Drain plug : **20 Nm (2.0 m.Kg, 14.5 ft. lb)**

5. Fill :
   • Oil in Crankcase

	Oil quantity : Refill **1.0 L**

6. Check :
   • Engine oil level

Refer to "ENGINE OIL LEVEL INSPECTION" section Page no 3-14

7. Install
   • Dip Stick (Oil Level Gauge)

EXHAUST SYSTEM INSPECTION

1. Inspect :
   • Bolt ① (Exhaust Pipe) - 2 Nos.
   Loose/ Damage ➔ Tighten / replace.
   • Gasket (Exhaust Pipe)
   Exhaust gas leaks ➔ Tighten /replace.

	Bolt : **10 Nm, 1.0 m.kg, 7.2 ft. lb.)**

2. Inspect :
   • Bolt ② (Muffler)
   Loose/Damage ➔ Tighten /replace.

	Bolt : **15 Nm (1.5 m.kg, 7.2 ft. lb)**

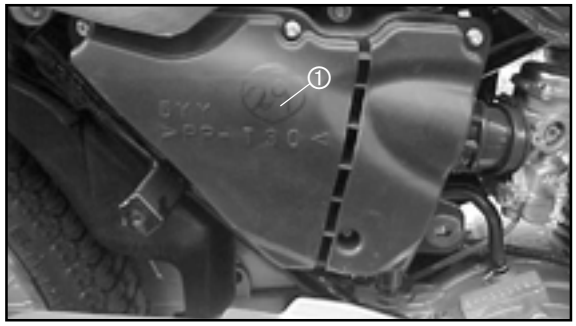
3. Inspect :
   • Screw ③ (Muffler Protector) - 6 Nos.
   Loose/ damage ➔ Tighten/replace

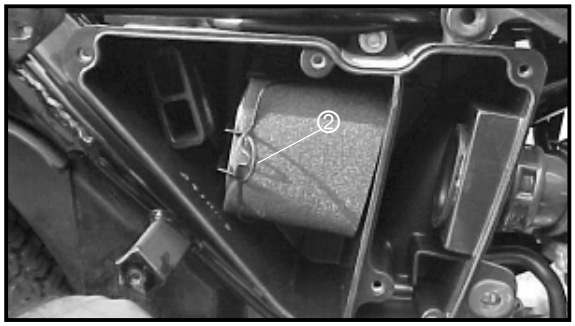
AIR FILTER CLEANING

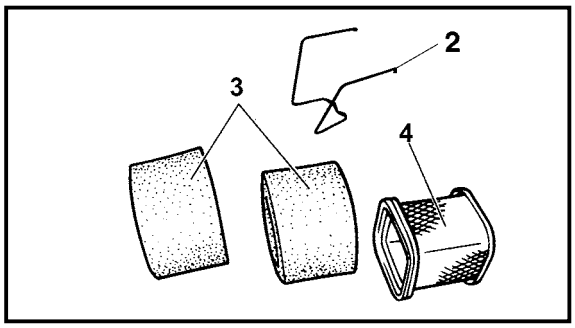
NOTE :

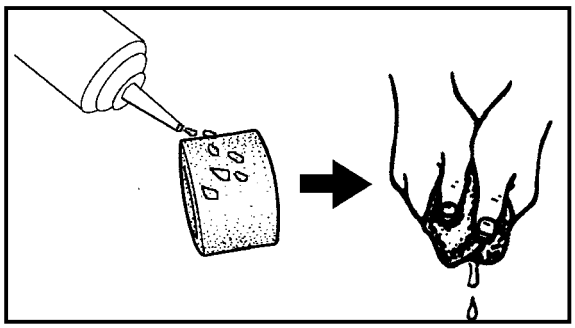
On the bottom of the Air Filter Case, there is a Drain Hose ①. If dust and/or water collects in this Drain Hose, clean the Air Filter Element and Air Filter Case.

AIR FILTER CLEANING









1. Remove:
   - Side Cover (R.H.)
   - Air Filter Case Cap ① - Unscrew 4 Nos. Screws
   - Spring Wire ②
   - Air Filter Element ③
   - Element guide ④

CAUTION:

Never operate the Engine without the Air Filter element installed. Unfiltered air will cause rapid wear of Engine parts and may damage the Engine. Operating the Engine without the Air Filter Element will also affect the Carburetor tuning, leading to poor Engine performance and possible overheating.

2. Inspect:
   - Air Filter Element ③
     Damaged ➔ Replace.
3. Clean:
   - Air Filter Element ③
     Use kerosene to clean the Element.

NOTE :

After cleaning, remove the remaining kerosene by squeezing rhe element.

CAUTION:

Do not twist the Air Filter Element when squeezing it.

4. Apply the recommended oil to the entire surface of the Air Filter Element uniformly and squeeze out the excess oil.

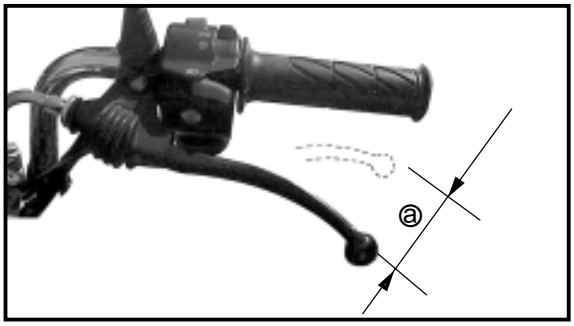
Recommended oil :
YAMALUBE (20W40) or equivalent

⚠WARNING

Never use low flash point solvents such as gasoline to clean the Air Filter Element. Such solvents may cause a fire or an explosion

5. Assemble
   - Air Filter Element on Element Guide
6. Install :
   - Air Filter Element Assy.
   - Spring Wire
   - Air Filter Case Cap
   - Side Cover (R.H.)

INSP ADJ

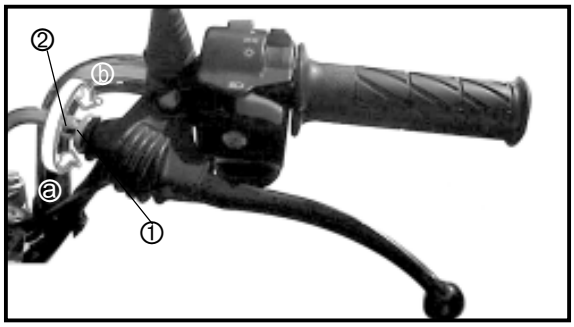


CLUTCH CABLE ADJUSTMENT

1. Check :
   • Clutch Cable free play ⓐ
   Out of specification ➔ Adjust,

Free play (clutch lever) :
10 ~ 15 mm at lever end

2. Adjust:
   • Clutch Cable free play



****

Adjustment steps:

Lever side

• Loosen the Locknut ①

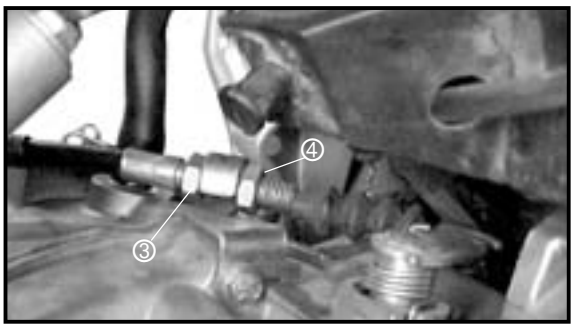
• Turn the Adjuster ② in or out until the specified free play is obtained.

Turning in ⓐ ➔ Free play is increased.
Turning out ⓑ ➔ Free play is decreased.

• Tighten the locknut ①

NOTE :

If not possible to achieve the specified free play at the Clutch Lever end then adjust it by using Adjuster below the Carburettor.



Below the Carburettor.

• Remove Side Covers, Seat and Fuel Tank
• Detach Clutch Cable from Push Lever
• Loosen the Locknut ③
• Turn the adjuster ④ in or out to increase or decrease the length of the Clutch Cable outer.
• Tighten the locknut ③
• Attach the Clutch Cable end to the Push Lever.
• Adjust the Clutch Cable free play at Lever end as before.
• Install Fuel Tank, Seat and Side Covers

****

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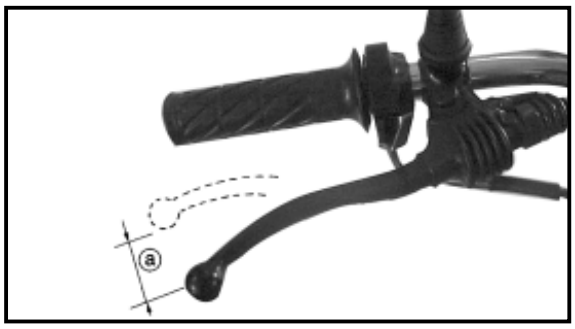
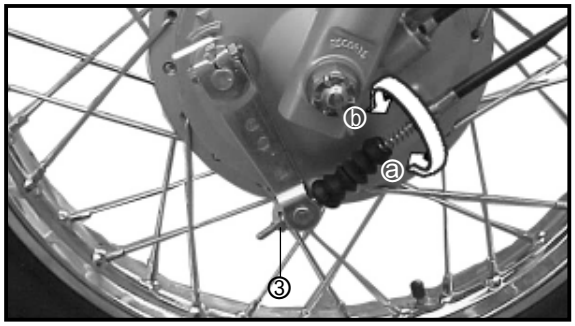




FRONT BRAKE ADJUSTMENT

1. Check :
   • Brake Lever free play a
   Out of specification ➔ Adjust.

Free play (Brake Lever):
25 ~ 30 mm at Brake Lever end

2. Adjust :
   • Brake Lever free play

****

Adjustment steps :

Lever Side

- Loosen the Locknut ①.
- Turn the Adjuster ② in or out until the specified free play is obtained.

Turning in ⓐ ➔ Free play is increased.
Turning out ⓑ ➔ Free play is decreased.

CAUTION:

Make sure that there is no Brake drag after adjusting the Front Brake Lever free play.

NOTE :

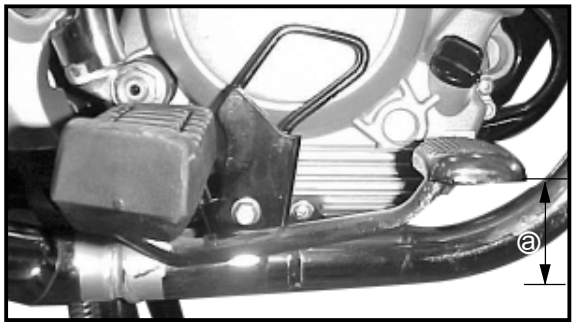
If not possible to achieve the specified free play in Brake Lever then adjust it with Adjuster on the Wheel end of the Front Brake Cable.

Wheel side

- Turn the Adjuster ③ in or out until the specified free play is obtained.

Turning in ⓐ ➔ Free play is decreased.
Turning out ⓑ ➔ Free play is increased

****

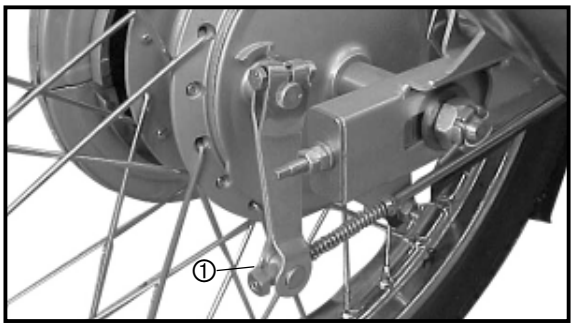


REAR BRAKE ADJUSTMENT

1. Check :
   • Brake Pedal free play ⓐ

Free Play :
20 ~ 30 mm

Out of specification ➔ Adjust



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Adjustment steps :

- Turn the Adjuster ① in or until the specified free play is obtained.

Turning out ⓐ ➔ Free play is increased.
Turning in ⓑ ➔ Free play is decreased.

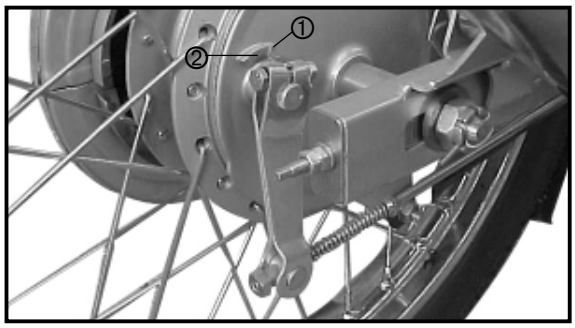
CAUTION:

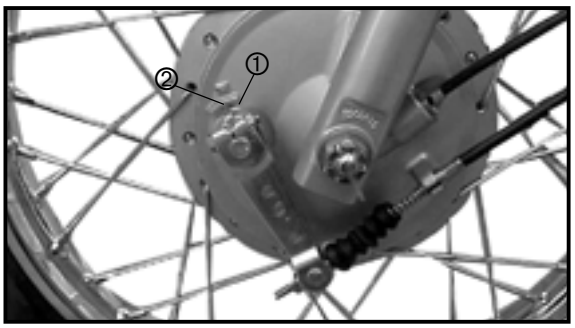
Make sure that the Brake does not drag after adjusting it.

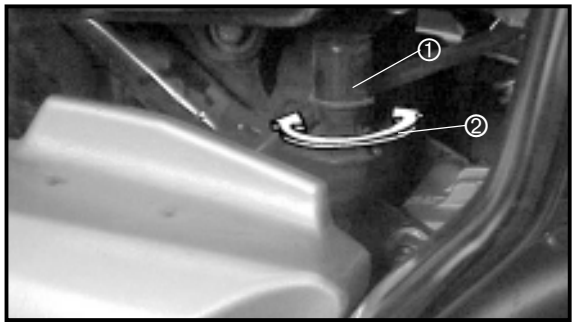
****

3. Adjust :
   - Brake light switch

   Refer to "BRAKE LIGHT SWITCH ADJUSTMENT". as given below







BRAKE SHOE INSPECTION

1. Operate the brake lever or pedal.
2. Inspect :
   - Brake shoes

Wear indicator ① reaches the wear limit line ② ➔ Replace the brake shoes as a set.

Refer to "FRONT WHEEL" and "REAR WHEEL" in CHAPTER 6 page no 6-6

BRAKE LIGHT SWITCH ADJUSTMENT

NOTE :

- The Brake Light Switch is operated by movement of the Brake Pedal.
- Adjustment is correct when the Brake Light comes on just before the braking effect actually starts.

1. Check :
   - Brake light operation timing

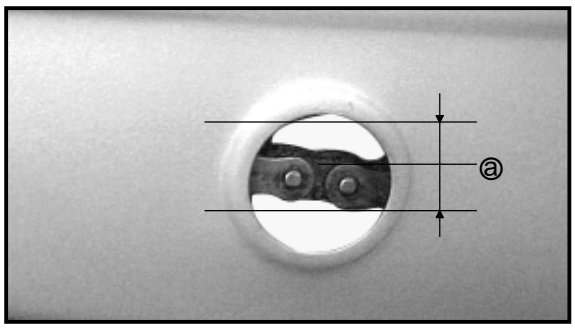
   Incorrect ➔ Adjust.
2. Adjust:
   - Brake light operating timing.

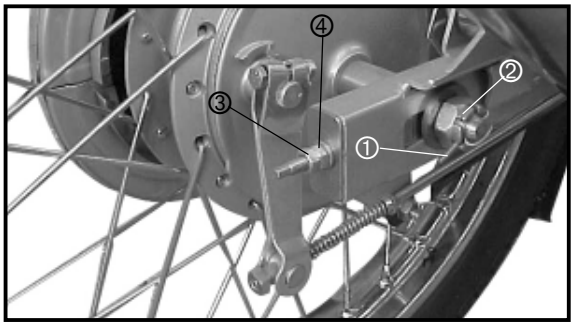
****

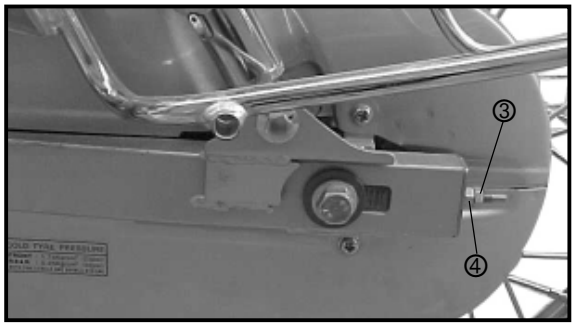
Adjustment steps:

- Hold the main body ① of the switch with your hand so that it does not rotate, and turn the adjuster ② in or out until the proper operation timing is obtained.

****







DRIVE CHAIN SLACK ADJUSTMENT

NOTE:

- Before checking and adjusting, rotate the Rear Wheel several revolutions and check the slack at several points to find the tightest point.
- Check and if necessary adjust the Drive Chain slack with the Rear Wheel in this "tightest" position.

CAUTION:

Too little chain slack will overload the engine and other vital parts; keep the slack within the specified limits.

- Excessive Chain slack will cause abnormal noise and will affect the life of chain, sprockets and low fuel efficiency.

⚠WARNING

- **Securely support the Motorcycle so that there is no danger of it falling over.**
- **Stand the Motorcycle on its centerstand.**

1. Stand the Motorcycle on its center stand.
2. Check :
   - Drive chain slack ⓐ
     Out of specification ➔ Adjust.

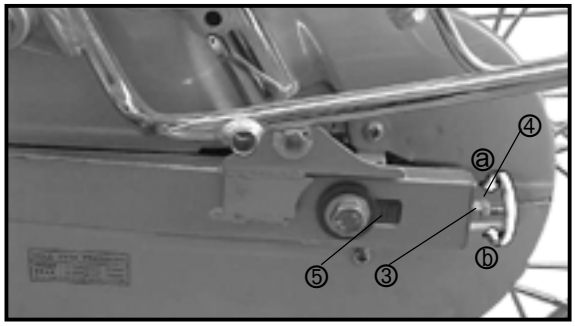
Drive chain slack:
20 ~ 30 mm

3. Remove :
   - Cotter pin ①
4. Loosen :
   - Axle Nut ②
   - Adjuster Locking Nut ③ & ④
5. Adjust :
   - Drive Chain slack
6. Align
   - Chain adjuster marsk LH/RH Side.

****

Make sure that mark of chain adjuster should be same position on LH/RH side chain adjuster by Adjusting Nut ④

****



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Adjustment steps :

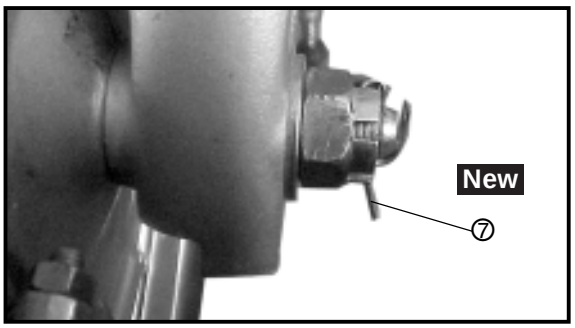
- Loosen both the Locknuts ④.
- Turn the Adjuster ③ in or out until the specified Drive Chain slack is obtained.

Turning in ⓐ ➔	**Drive Chain slack is decreased.**
Turning out ⓑ ➔	**Drive Chain slack is increased.**

NOTE :

- Turn each Chain Adjuster exactly the same amount to maintain correct Axle alignment. To check the alignment there are marks on Chain Adjuster ⑤. Ensure that left hand and right hand chain alignment marks are equally matched. Use them when adjusting the slack for proper alignment.
- Before tightening the Axle Nut ② and Driven Sprocket Locknut to specifications, make sure that there is no clearance at the Adjuster (or the Swing Arm end) on both sides by pushing the Wheel forward.

Nut (driven sprocket axle) :
91 Nm (9.1m. kg., 66 ft-lb)
Nut (rear wheel axle):
91 Nm (9.1 m.kg, 66 ft.lb)



6. Install :
   - Cotter pin ⑦ **New**
     Into the Axle Nut and bend the end of the Cotter Pin.

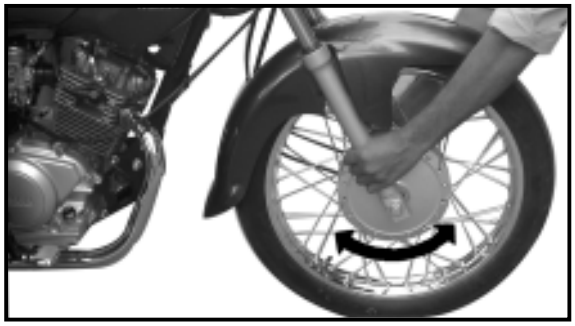
CAUTION:

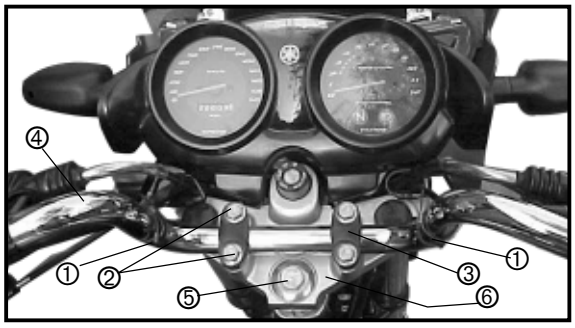
Do not loosen the Axle Nut after tightening the torque. If the axle nut grooves is not aligned with the Cotter Pin hole, align the groove with the hole by tightening up the Axle Nut.

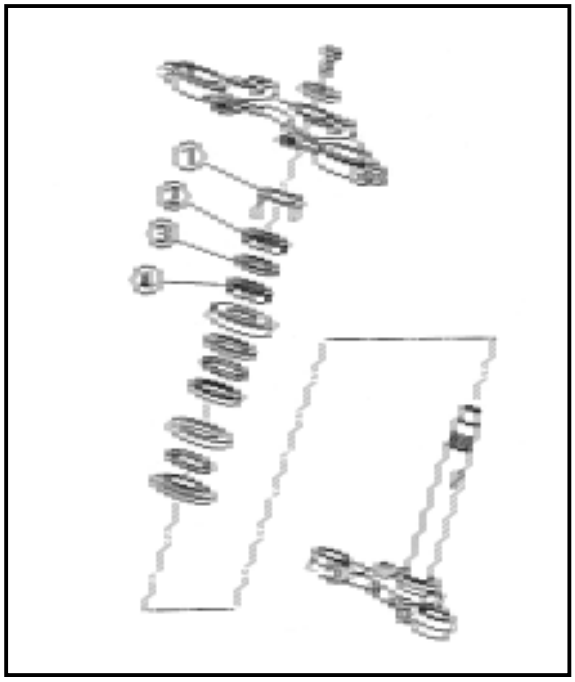
⚠WARNING

Always use a new cotter pin.

7. Adjust :
   - Brake Pedal free play
     Refer to “BRAKE FREE PLAY“ section. page no 3-18







STEERING HEAD INSPECTION

⚠WARNING

Securely support the Motorcycle so that there is no danger of it falling over.

1. Stand the Motorcycle on a level surface.

NOTE :

Stand the Motorcycle on its Center Stand.

2. Elevate the Front wheel by placing a suitable stand under the Engine.
3. Check:
   - Handlebar assembly
     Grasp the Handle Bar and gently rock the Steering.
     Looseness ➔ Adjust the Handlebar.
   - Steering assembly bearings
     Grasp the bottom of the lower Front Fork tubes and gently rock the Fork Assembly.
     Looseness ➔ Adjust the Steering Head.

4. Loosen - Pinch Bolt - (Handle Crown)
5. Remove :
   - Bands ①
   - Bolts (Handlebar Upper holders) ② - 4 Nos.
   - Handlebar upper holders ③ - 2 Nos.
   - Handlebar ④
   - Handle crown bolts ⑤
   - Handle crown ⑥
5. Adjust :
   - Steering head

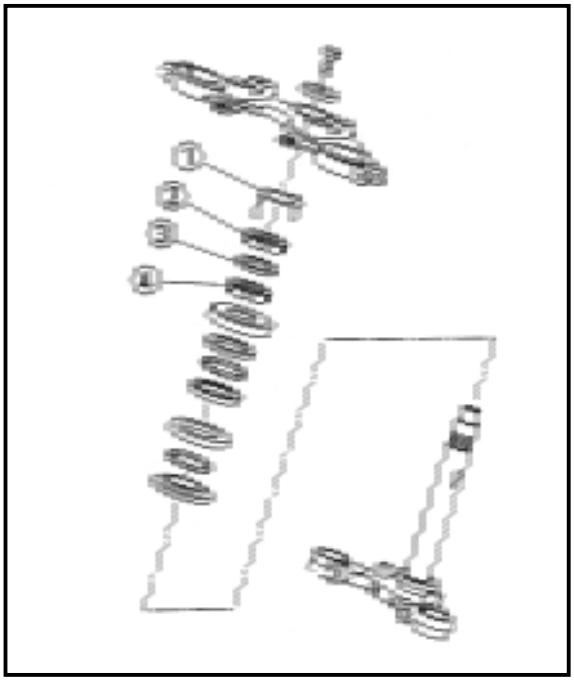
****

Adjustment steps:

- Remove the lock washer ①
- Remove the Ring Nut ② (upper) and Dumper Rubber ③ , then loosen the Ring Nut ④ (lower) using the Ring Nut wrench.
- Tighten the ring nut (lower) at initial tightening torque

	Ring nut wrench : YSST 621
	Ring nut-lower (initial tightening): 33 Nm (3.3 m.kg, 25 ft.lb)

- Loosen the ring nut ④ (lower) 1/4 turn.
- Tighten the Ring Nut (lower) using the Ring Nut Wrench up to final tightening torque.



NOTE :

Set the Torque Wrench to the Ring Nut Wrench so that they form a right angle.

Ring nut-lower (final tightening) : 23 Nm (2.3 m.kg, 17 ft. lb)

⚠WARNING

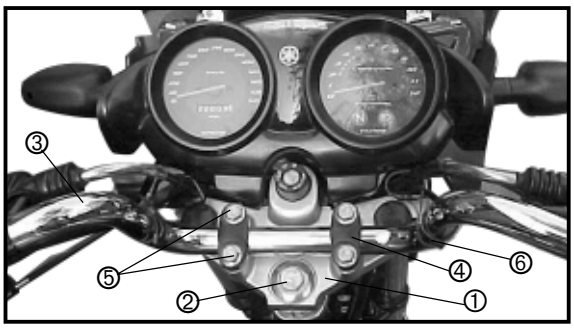
Avoid over torquing.

- Check the Steering Stem by Turning it Lock to Lock. If there is any binding, remove the Steering Stem Assembly and inspect the Steering Bearings.
  Refer to "STEERING HEAD AND HANDLEBAR" section in Chapter 6 Page no 6-29
- Install the Damper Rubber ③ and Ring Nut ② (upper), then align the slots of both Ring Nut ④ (lower) and tighten the other until they are aligned.
- Install the Lock Washer ①

NOTE :

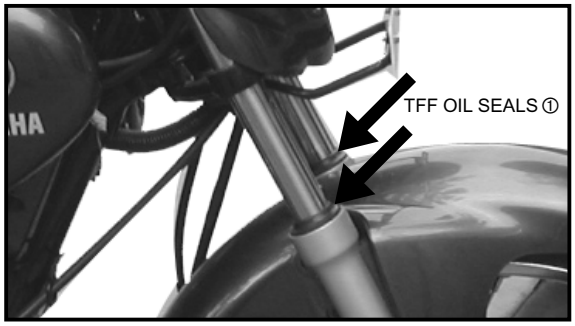
Make sure the lock washer tab is placed in the slots of Ring Nut.

6. Install :
   - Handle crown ①
   - Handle Crown bolt ②
   - Handlebar ③
   - Handlebar upper holder ④ - 2 Nos
   - Bolts (handlebar upper holders) ⑤-4 Nos.
   - Bands ⑥ - 2 Nos.



Bolts (handle crown and inner tube) 23 Nm (2.3 m.kg, 17 ft.lb)
Bolt (handle crown and Steering Shaft) 35 Nm (3.5 m. kg, 25 ft.lb)

Bolts (handlebar upper holder) 23 Nm (2.3 m. kg, 17 ft. lb)



FRONT FORK INSPECTION

⚠WARNING

Securely support the motocycle so that there is no danger of it falling over.

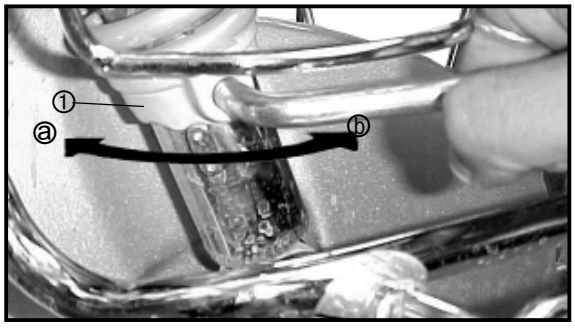
1. Stand the Motorcycle on a level surface.
2. Check:
   • Inner tube
   Scratches/damage ➔ Replace.
   • Oil seal ①
   Excessive oil leakage ➔ Replace
1. Hold the Mitorcycle upright on level surface and apply the Front Brake
2. Check:
   • Operarion
   Push down hard on the Handlebar several times.
   Unsmooth operation ➔ Repair.
   Refer to "FRONT FORK" in Chapter 6, Page no 6-21

REAR SHOCK ABSORBER ADJUSTMENT

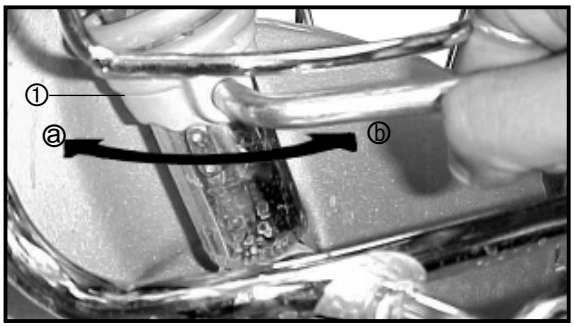
⚠WARNING

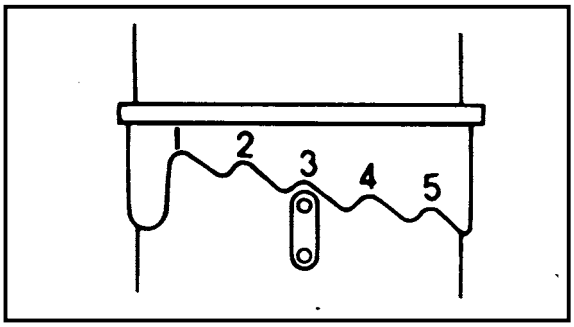
- **Always adjust each Rear Shock Absorber preload to the same setting. Uneven adjustment can cause poor handling and loss of stability.**
- **Securely support the Motorcycle so that there is no danger of it falling over.**

1. Adjust :
   • Spring preload
   Turn the adjuster ring ① to direction ⓐ or ⓑ using a plain rod.



REAR SHOCK ABSORBER ADJUSTMENT





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Adjustment steps:

• Turn the Adjuster Ring ① in or out.

Turning toward ⓐ ➔	**Spring preload is increased.**
Turning toward ⓑ ➔	**Spring preload is decreased.**

Adjustment numbers:	
Standard	2
Minimum	1
Maximum	5

CAUTION:

- **Never turn the Adjuster beyond the maximum or minimum setting.**
- **Always adjust each Shock Absorber to the same setting.**

****

TYRE INSPECTION

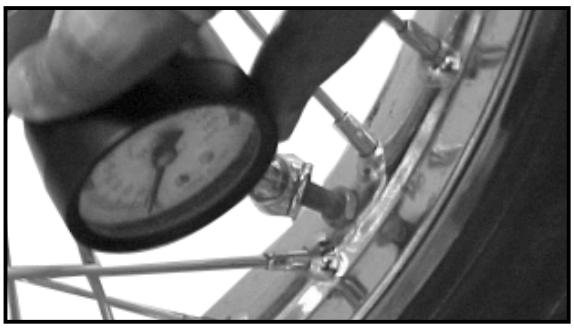
1. Measure :
   - Tyre inflation pressure
     Out of specification ➔ Adjust.

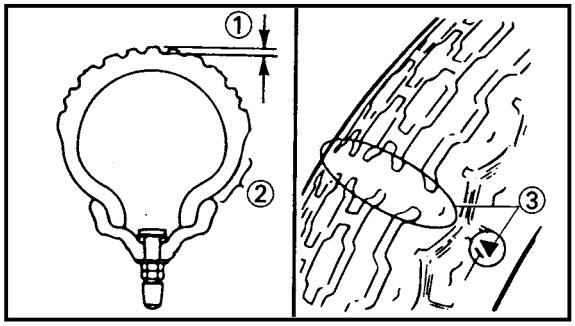
⚠WARNING

- **Tyre inflation pressure should only be checked and adjusted when the Tyre temperature equals the ambient air temperature. Tyre inflation pressure and suspension must be adjusted according to the cargo, rider, pasenger and accessories (fairing, saddlebags, etc. if approved for this model), and according to whether the Motorcycle will be operated at high speed or not.**

NEVER OVERLOAD THE MOTORCYCLE.

- **Operation of an overloaded Motorcycle could cause tyre damage, accident or injury.**





Cold tyre pressure Single Rider or with Pillion & Rider	**Front**	**25 psi [1.75kg+1 cm²]**
	Rear	**32 psi [2.25kg+1 cm²]**

2. Inspect :
   • Tyre surfaces
   Wear/damage ➔ Replace

Minimum Tyre tread Depth :
(Front and Rear)
1.6 mm

① Tread Depth
② Side wall
③ Wear indicator

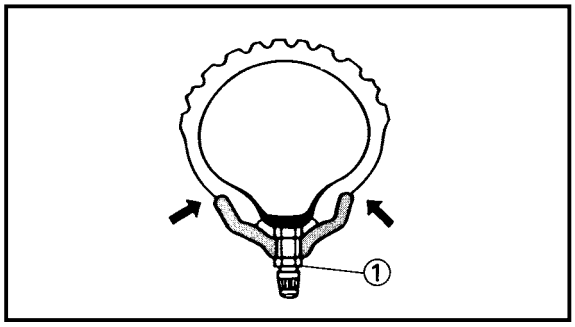
⚠WARNING

- **It is dangerous to ride with a worn out tyre. When the tyre tread begins to show signs of wear, replace the tyre immediately.**
- **Patching a punctured tube is not recommended. If it is absolutely neccessary to do so, use great care and replace the tube as soon as possible with a good quality replacement tube.**
- **Do not use tubeless tyres on a wheel designed for tube type tyres only. Tyre failure and personal injury may result from sudden deflation.**

- Be sure to install the correct Tube when using Tube Type Tyres.
- While installing Tyre on Wheel always check that the Tyre lining is seated uniformly with respect to wheel rim.

⚠WARNING

After mounting a Tyre, ride conservatively for a while to give the Tyre time to seat itself properly in the Rim, Failure to do so could lead to an accident with possible injury to the rider or damage to the Motorcycle.



2. After a Tyre repair or replacement, be sure to tighten the Valve Stem Locknut ① to specification.

Locknut:
1.5 Nm (0.15 m.kg, 1.1 ft.lb)

SPOKE INSPECTION AND TIGHTENEING

SPOKES INSPECTION AND TIGHTENING

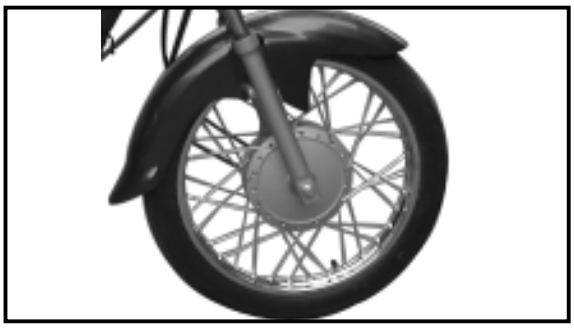
1. Inspect :
   • Spokes ①
   Bending/damage ➔ Replace.
   Loose spoke ➔ Retighten
2. Tighten :
   • Spokes

	Nipple Tighting Tool **YSST - 629**

NOTE :

Be sure to tighten the Spokes before and after break-in.

	Nipple Tighting Torque **2 Nm (0.2 m.kg, 1.5 ft.lb)**



WHEEL INSPECTION

1. Inspect :
   • Wheels
   Damage/Bends ➔ Replace.

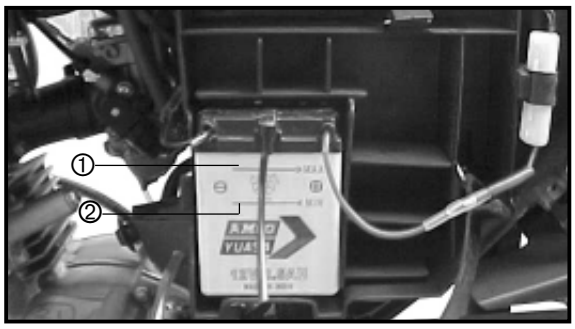
NOTE :

Always balance the wheel when a tyre or wheel has been changed or replaced.

⚠WARNING

Never attempt to make any repairs to the wheel rim.

ELECTRICAL

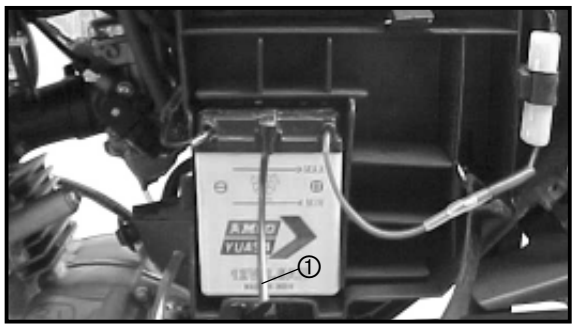


BATTERY INSPECTION

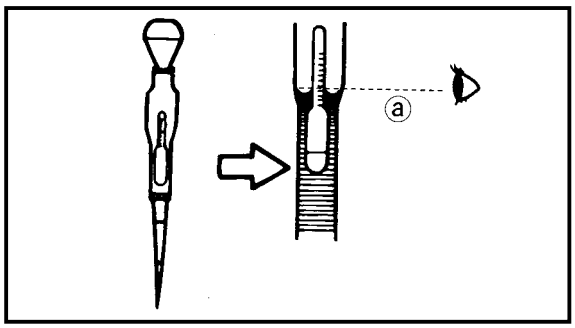
1. Remove:
   • Side Cover (L.H.)
   Refer to "SEAT, SIDE COVERS AND FUEL TANK" section. Page no 3-3
   • Battery
2. Inspect :
   • Electrolyte level
   Electrotyte level should be between the Upper ① and Lower ② level marks. Electrolyte level is too low ➔ add distilled water to proper level.

CAUTION:

Use distilled water only for top up. Tap water contains minerals which are harmful to a Battery.



3. Inspect :
   • Battery terminals
   Poor connections ➔ Correct
4. Inspect :
   • Breather hose ①
   Obstruction ➔ Remove
   Damage ➔ Replace



5. Check :
   • Specific gravity ⓐ
   Less than 1.230 ➔ Recharge the Battery

Charging Current :
0.25 amp
Specific Gravity :
1.230±0.005

CAUTION:

When inspecting the Battery, make sure that the Breather Hose is routed correctly. If the Breather Hose is positioned in such a way as to allow Battery Electrotyte gas to come into contact with the Frame, this could damage the Motorcycle and ruin its finish.Check the proper seating of Battery top plugs.

BATTERY INSTALLATION

INSP ADJ

Replace the battery if:
- Battery voltage does not rise to a specific value or bubbles fail to rise during charging.
- Sulphation of one or more cells occurs, (as indicated by the plates turning white, or material accumulating in the bottom of the cell).
- Specific gravity readings after a long, slow charge indicate that one cell is charged lower than the rest.
- Warpage or buckling of plates or insulators is evident.

CAUTION:

Always charge a new Battery completely before installing it to ensure maximum performance.

⚠WARNING

Battery electrolyte is dangerous. It contains sulfuric acid which is poisonous and highly caustic.
Always follow these preventive measures:
- **Avoid body contact with electrolyte as it can cause severe burns and permanent eye injury.**
- **Wear protective eye gear when handling or working near batteries.**
- **Antidote (EXTERNAL):**
- **SKIN- Flush with water for 15 minutes and get immediate medical attention.**
- **Antidote (INTERNAL)**
- **Drink large quantities of water or milk followed with milk of magnesia, beaten egg or vegetable oil. Get immediate medical attention.**
- **Batteries generate explosive hydrogen gas.**
- **Always follow these preventive measures:**
- **Charge batteries away from fire, sparks or open flames (e.g., welding equipment, lighted cigarettes, etc.)**
- **DO NOT SMOKE when charging or handling batteries.**
- **KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.**

CAUTION:

Connect the positive lead ① first and then connect the negative lead ②

6. Install :
   - Battery
7. Connect:
   - Battery leads
8. Connect :
   - Breather hose

   Be sure the Hose is properly attached and routed.

   Refer to “CABLE ROUTING” section in Chapter 2, Page no 2-21
9. Install :
   - Side cover (left)

   Refer to “SEAT, SIDE COVERS AND FUEL TANK” section on Page no 3-3

⚠WARNING

Never use a Fuse with a rating other than that specified. Never use other materials in place of a Fuse. An improper Fuse may cause extensive damage to the electrical system, malfunction of lighting and ignition and could possibly cause a fire.

FUSE INSPECTION

CAUTION:

Always turn off the Main Switch when checking or replacing the Fuse. Otherwise, a short circuit may occur.

1. Remove:
   • Side cover (left)
   Refer to "SEAT, SIDE COVERS AND FUEL TANK" section Page no 3-3
   • Fuse holder ①
2. Inspect :
   • Fuse

****

Inspection steps :

• Connect the Multimeter to the fuse and check it for continuity.

NOTE :

Set the multimeter selector to "Ohm x 1 resistance " position.

	Multimeter

****

   • If the Multimeter is indicates non continuity
   ➔ Replace the fuse.
3. Replace :
   • Blown Fuse

****

Replacement steps:

• Turn off the Main Switch.
• Install a new fuse with the proper current rating.
• Turn on switches to verify operation of related electrical deveces.
• If the fuse blows again immediately, check the electrical circuit.

****

Fuse Ampearage : 10A

4. Install :
   • Fuse holder
   • Side cover (left)
   Refer to "SEAT, SIDE COVERS AND FUEL TANK" section Page no 3-3

HEADLIGHT BEAM ADJUSTMENT/ HEADLIGHT BULB REPLACEMENT

HEADLIGHT BEAM ADJUSTMENT

1. Loosen:
   • Bolt ①
2. Loosen:
   • Screw ② - 2 Nos.
3. Adjust :
   • Headlight beam (vertical)

Push down ➔ Headlight beam moves lower.
Pull up ➔ Headlight beam moves higher.

NOTE :
Punch Mark is given on the Adjuster Bracket for reference to tighten the Bolt ①.

HEADLIGHT BULB REPLACEMENT

1. Remove:
   • Headlight Assy.
2. Disconnect :
   • Headlight beam leads from both bulbs.
   • Bulb cover
3. Remove :
   • Bulbs - 2 Nos.

NOTE :
Unhook the Bulb spring.

⚠WARNING

Keep flammable products and your hands away from the Bulb while it is on, it will be hot. Do not touch the bulb unit until it cools down.

4. Install:
   • Bulb (new)
   Secure the new Bulb with the Bulb spring.

CAUTION:

Avoid touching glass part of bulb. Also keep it away from oil otherwise, transparency of glass, bulb life and brightness will be adversely affected. If oil gets on bulb, clean it with a cloth moistened thoroughly with alcohol or lacquer thinner.

CHAPTER 4

ENGINE OVERHAUL

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ENGINE REMOVAL

It is not necessary to remove the Engine in order to remove the following parts.

- Cylinder Head
- Cylinder
- Piston
- Clutch
- CDI Magneto

SIDE COVERS, SEAT AND FUEL TANK REMOVAL

1. Remove :
   - Side covers (LH and RH)
   - Seat
   - Fuel tank

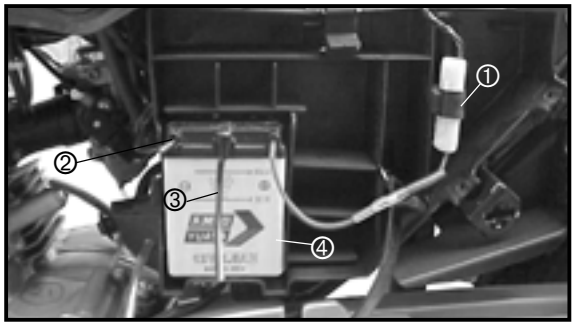
Refer to the “SIDE COVERS, SEAT AND FUEL TANK” section in Chapter 3, Page no 3-3

ENGINE OIL

1. Drain :
   - Engine oil

Refer to the “ENGINE OIL REPLACEMENT” section in Chapter 3, Page no 3-14

BATTERY

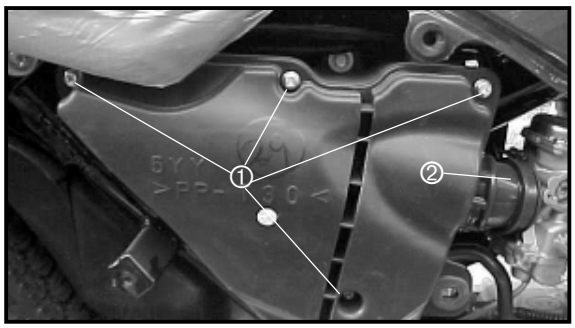


1. Remove :
   - Fuse ①
   - Negative terminal (Black) ②
   - Battery Breather Hose ③
   - Battery ④

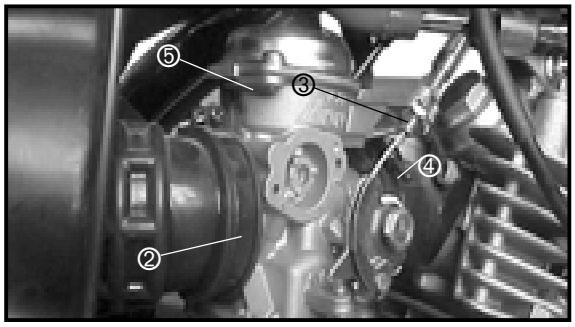
CAUTION:

Disconnect the Battery Negative Terminal (Black) first and then disconnet the Positive Terminal (Red)

CARBURETOR



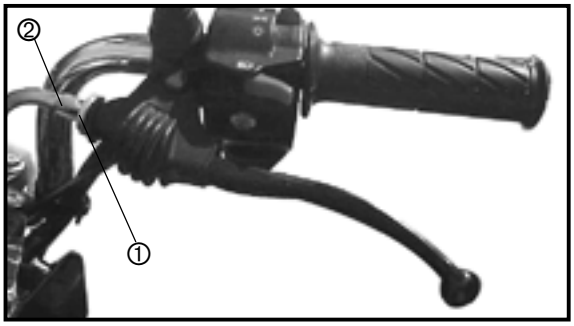
1. Loosen
   - Air cleaner case mounting bolts ① - 4 Nos.
   - Hose Clamp assy ②
2. Remove
   - Throttle Cable ③
   - Carburetor Mounting Clamp ④
   - Air vent hose
   - Carburetor ⑤

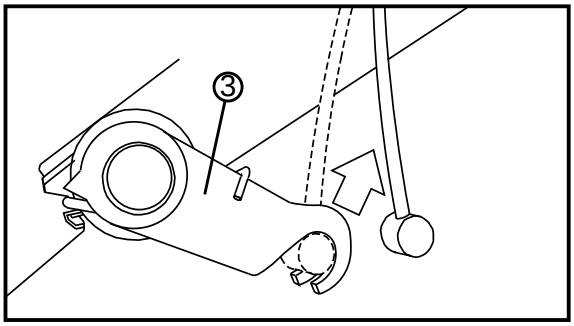


Refer to the “CARBURETOR” section in Chapter 5, Page no 5-2

NOTE :

Cover the Carburetor with a clean cloth to prevent dirt or foreign material from entering the Carburetor.





CLUTCH CABLE

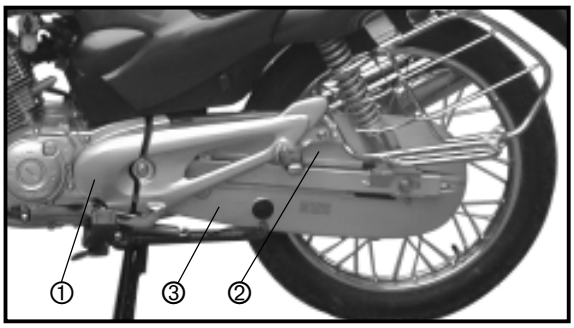
1. Remove :
   • Clutch cable

****

Removal steps :

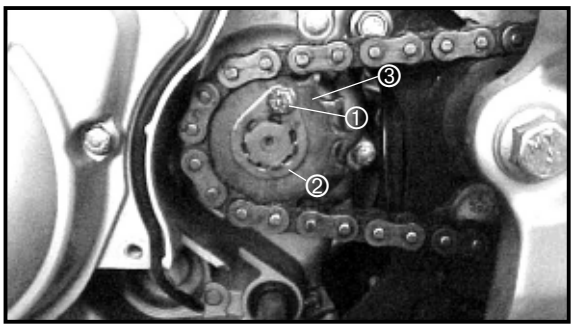
- Loosen the locknut ① of the Clutch Lever.
- Turn in the Adjuster ② to enough to free the inner Clutch Cable
- Unhook the Cable End from Push Lever ③ on the Crankcase L.H.

****



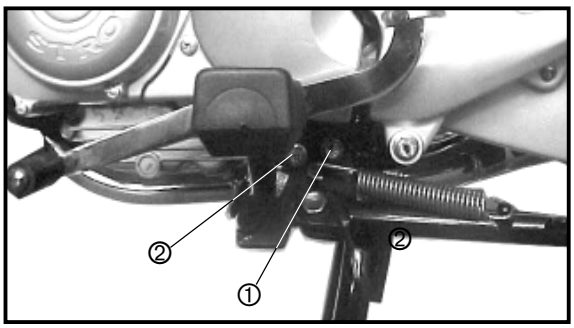
DRIVE CHAIN

1. Remove :
   • Crankcase Cover#1 (L.H.) ①
   • Drive Chain Case upper ② and lower ③
2. Slack off the Drive Chain
   Refer to “DRIVE CHAIN SLACK ADJUSTMENT” section in Chapter 3, Page no 3-20
3. Remove :
   • Bolt ① (Holder Sprocket)
   • Holder Sprocket ②
   • Sprocket Drive ③
   Remove with the Drive Chain



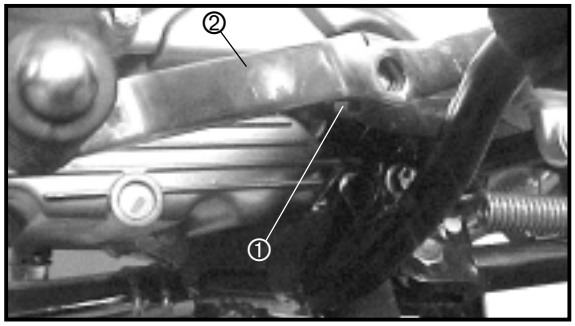
EXHAUST MUFFLER

1. Remove :
   • Bolt (exhaust pipe)
   • Bolt (muffler)
   Refer to “EXHAUST SYSTEM” section in Chapter 3, Page no 3-15
2. Remove :
   • Exhaust muffler



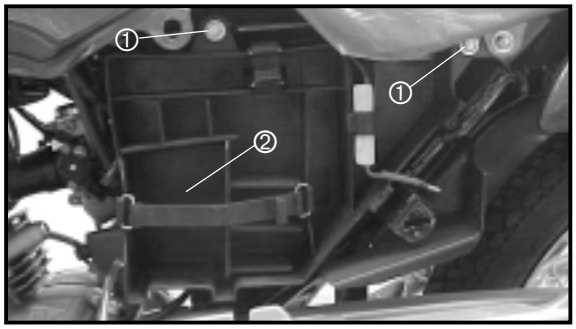
FOOTREST ASSEMBLY

1. Remove:
   • Bolt (footrest) ① - 2 Nos. (LH & RH)
   • Bolt Axle - Lower rear mounting ②
   • Footrest Assembly



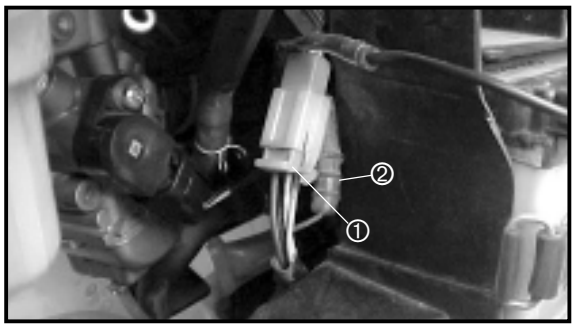
SHIFT PEDAL

1. Remove
   - Bolt (Shift Pedal) ①
   - Shift Pedal ②



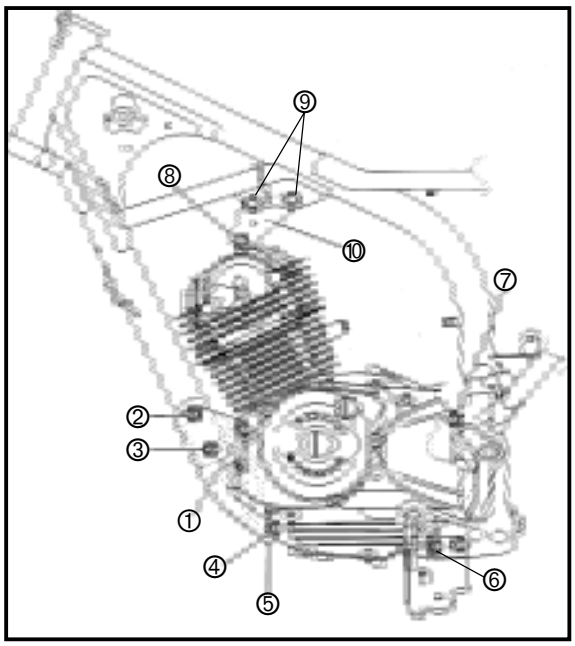
BATTERY BOX

1. Remove
   - Bolt (Battery Box) ① 3 nos
   - Battery Box ②



LEADS

1. Disconnect:
   - Stator Coil Lead Coupler ①
   - Sensor Coil Lead Coupler ②
2. Remove :
   - Spark Plug Cap



ENGINE REMOVAL

1. Remove :
   - Engine Mount Bolt (front centre) ①
   - Bolt (Engine Mount stay front upper) ②
   - Bolt (Engine Mount stay front lower) ③
   - Engine Mount Bolt front lower ④
   - Engine Mount stay ⑤
   - Engine Mount Bolt (bottom rear) ⑥
   - Engine Mount Bolt (upper rear) ⑦
   - Engine mount stay upper ⑧
   - Bolt AIS Mounting on stay ⑨ - 2 Nos.
   - Engine Mount Stay ⑩
3. Remove :
   - Engine Assembly
4. Mount
   - Engine on Engine Stand

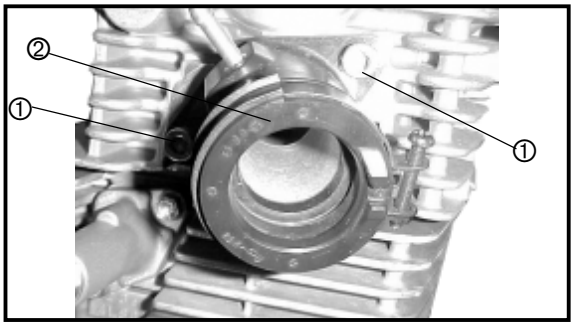
ENGINE DISASSEMBLY

CYLINDER HEAD, CYLINDER AND PISTON

NOTE:

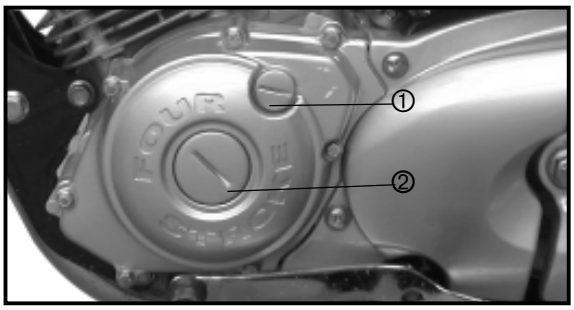
With Engine mounted on Motorcycle, the Cylinder Head, Camshaft and Cylinder can be maintained by removing the following parts.

- Side Covers
- Seat
- Chain Tensioner (Retract)
- Exhaust Pipe
- Carburetor
- Spark Plug Lead
- Engine Mount Stay (upper)
- Timing Check Plug
- Center Plug
- AIS Clamps

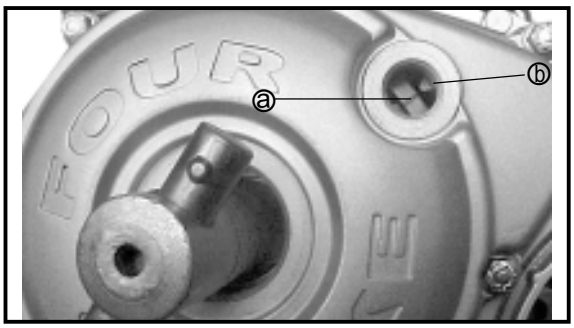


CAUTION:

Before Engine disassembly clean the outer body of Engine properly

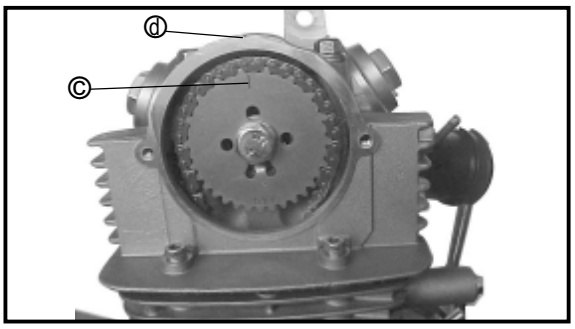


1. Remove :
   - Spark Plug
   - Bolts (Intake Manifold) ① 2 nos
   - Intake Manifold ②
   - Valve Cover with 'O' ring
2. Remove
   - Timing Check Plug (with 'O' ring) ①
   - Centre Plug (with 'O' ring) ②
3. Align :
   - Piston to TDC position



NOTE:

Turn the Crankshaft anticlockwise with a Socket Spanner 17 mm



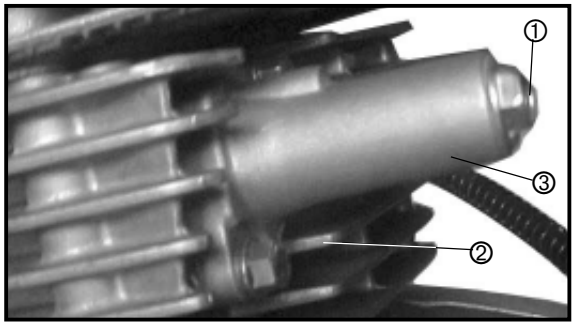
****

TDC alignment steps:

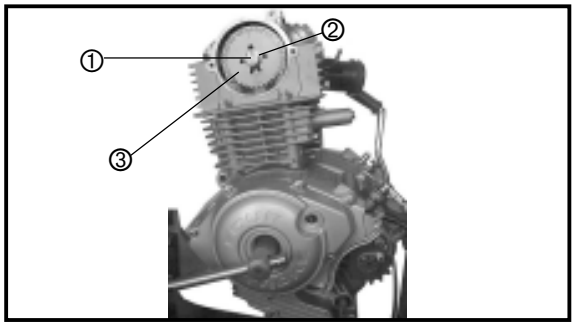
- Turn the Crankshaft anticlockwise until the slit (cut mark on magneto) ⓐ matches the stationary pointer ⓑ
- Align the "I" mark Ⓒ on the Cam Sprocket with the stationary pointer ⓓ on the Cylinder Head, the Piston is at the Top Dead Center (TDC) of compression stroke.

NOTE :

To confrim that the Piston is at TDC of compression stroke, check Rocker Arms for free movement.

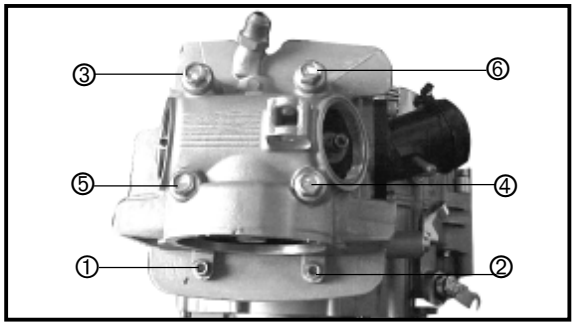


5. Remove :
   - Tensioner Cap Bolt ①
   - Retract completely the Tensioner Rod by Screw in (clockwise) direction.
   - Bolts (timing chain tensioner) ② 2 Nos
   - Timing Chain Tensioner Assembly ③
   - Gasket



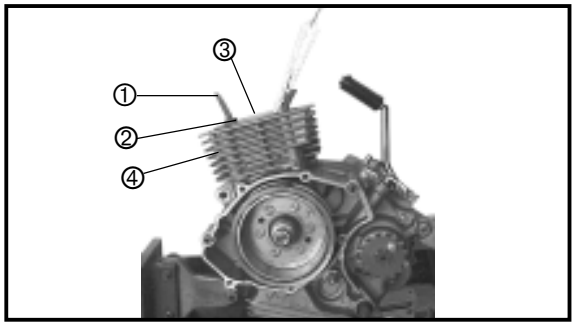
6. Remove :
   - Bolt (cam sprocket) ①
   - Plate washer (cam sprocket) ②
   - Cam sprocket ③

NOTE :
Hold the Nut Rotor with socket spanner for opening Cam Sprocket Bolt. Fasten a safety wire to the Timing Chain to prevent it from falling in the Crankcase.

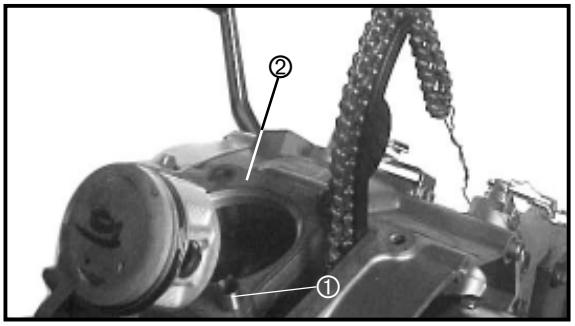


7. Remove :
   - Bolts (Cylinder Head) as per sequence. (6 nos)
   - Cylinder Head

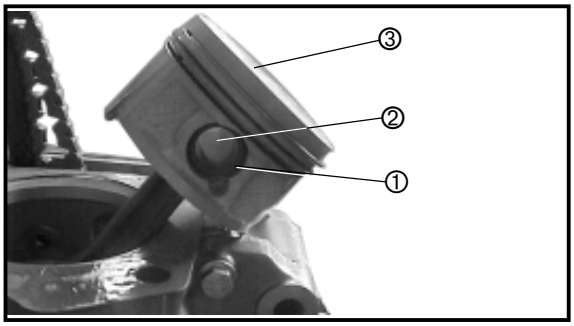
NOTE :
- Loosen the Bolts 1/4 turn each and remove then after all are loosened.
- Reomve the Bolts starting with the lowest number one.



8. Remove :
   - Guide Stopper #1 ①
   - Dowel Pins ②
   - Gasket (Cylinder Head) ③
   - Cylinder ④



9. Remove :
   - Dowel Pins ① - 2 Nos
   - Gasket (Cylinder) ②



10. Remove :
    - Piston Pin Circlip ① 2 nos
    - Piston Pin ② , using Piston Pin Replacer
    - Piston ③

NOTE :

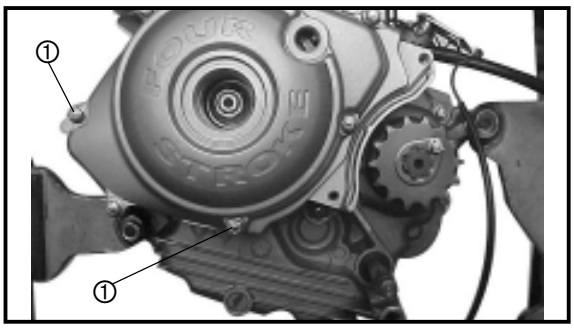
Before removing the Piston Pin Circlip, cover the Crankcase with a clean cloth to prevent the Circlip from falling into the Crankcase cavity.

	Piston Pin Replacer : YSST - 607

C. D. I. MAGNETO

NOTE :

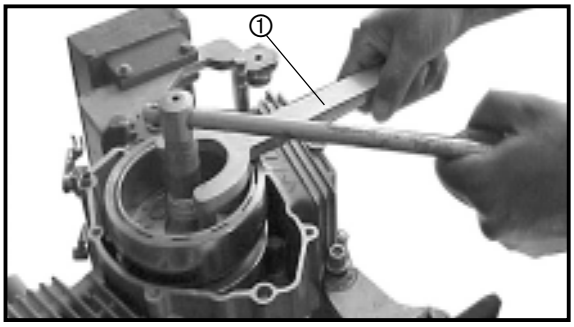
The CDI Magneto can be removed while the Engine is mounted on the Motorcycle by removing the following parts :
- Shift Pedal
- Cover Chain Case (L. H.)



1. Remove :
   - Bolts (Crankcase Cover-1 L.H.) ① - 7 nos
   - Crankcase Cover-1 (L.H.)
   - Neutral Light wire from Neutral Switch

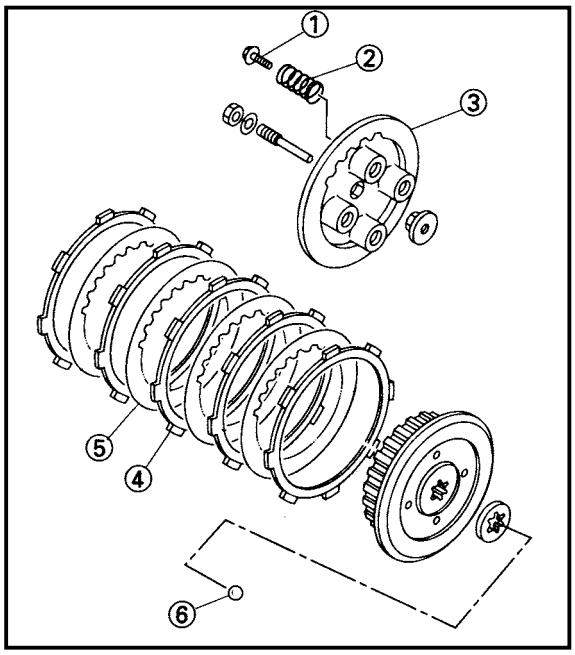
NOTE :

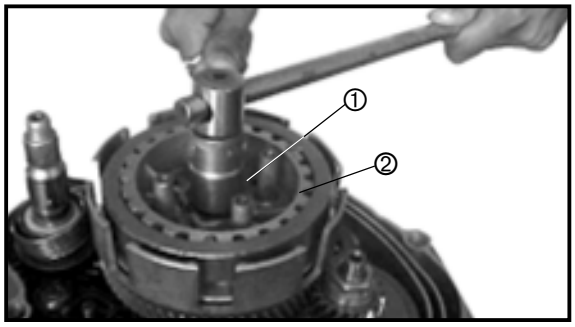
Loosen the Bolts in criss cross pattern.



2. Attach
   - Magneto holder - ①

	Magneto Holder : YSST - 627





CLUTCH

NOTE :

The Clutch Assembly can be removed while the Engine is mounted on the Motorcycle by removing the following parts and draining the Engine oil:

• Kick Starter.

1. Remove :
   • Nut kick Crank assy ①.
   • Kick Crank Assy ②.
   • Bolts Crankcase Cover-2 (R.H.) ③ - 9 nos
   • Crankcase Cover (RH)

NOTE :

• Hold Kick Crank Assy. at extreme down position for opening the Nut Kick Crank Assy.
• Loosen the Bolts of Crankcase Cover #2 (RH) in a crisscross pattern.

2. Remove :
   • Gasket ①
   • Dowel pins ② - 2 Nos

3. Remove:
   • Pressure Plate Bolts ① - 4 Nos
   • Clutch Springs ② - 4 Nos
   • Pressure Plate ③ with Push rod 1
   • Friction Plates ④ - 5 Nos
   • Clutch Plates ⑤ - 4 Nos

NOTE :

Loosen the Pressure Plate Bolts in a crisscross pattern.

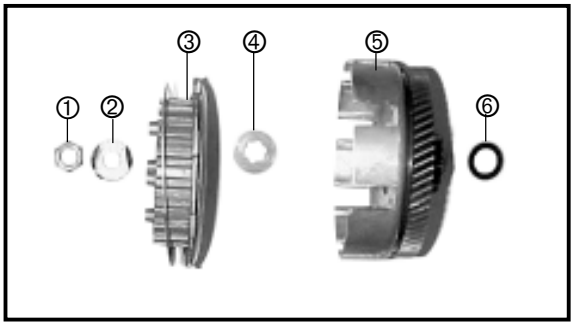
4. Remove :
   • Ball ⑥

5. Loosen :
   • Straighten the Lock Washer tab.
   • Nut (clutch boss) ①

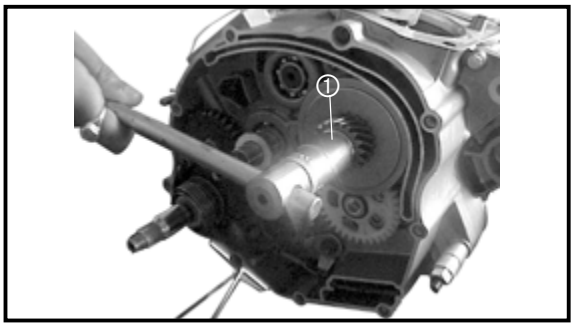
NOTE :

Loosen the Clutch Boss Nut ① while holding the Clutch Boss ② with the Clutch Holder.

	Clutch Hub Holder **YSST - 233**



6. Remove :
   - Clutch Boss Nut ①
   - Lock Washer ②
   - Clutch Boss ③
   - Thrust Washer ④
   - Clutch Housing ⑤
   - Spacer ⑥

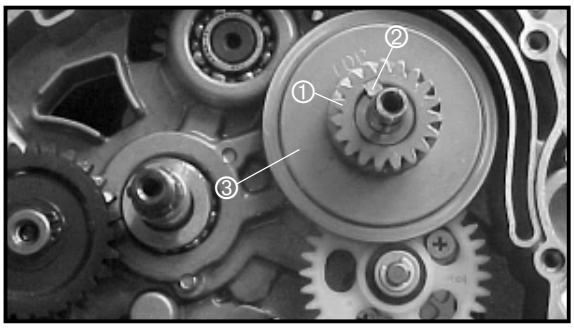


7. Loosen :
   - Nut ① (Primary Drive Gear)

NOTE :

• Open the Nut (Primary Drive Gear) by holding the Magneto with Magneto Holder.

	Magneto Holder **YSST - 627 A**



8. Remove
   - Nut
   - Plate Washer
   - Primary Drive Gear ①
   - Key ②
   - Rotary Filter ③

OIL PUMP

NOTE :

The oil pump can be removed while the engine is mounted by removing the following parts

- Clutch
- Primary drive gear
- Rotary filter

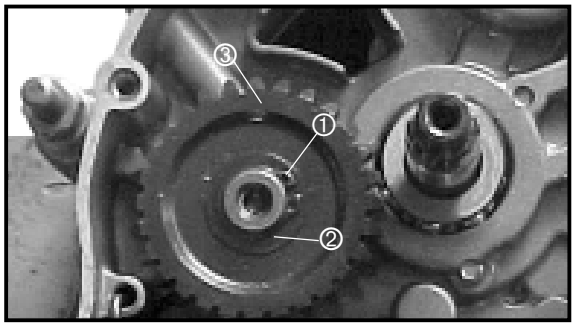
1. Remove :
   - Gear pump drive ①
   - Screw (oil pump-2 nos) ②
   - Oil pump assembly ③
   - Gasket (oil pump)
   - Oil strainer ④

KICK STARTER

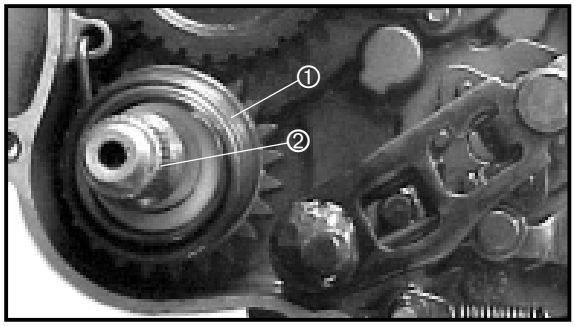
NOTE :

The kick starter can be removed while the engine is mounted by removing the following part.

- Kick Crank Assy
- Crankcase Cover 2 (RH)
- Clutch Drum Assy

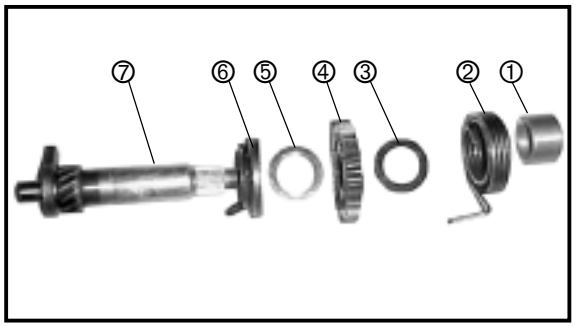


1. Remove :
   - Circlip ①
   - Plate washer ②
   - Gear Kick idle ③
   - Plate washer
   - Circlip



2. Remove :
   - Torsion spring ①
   - Kick axle assembly ②

Kick Starter disassembly



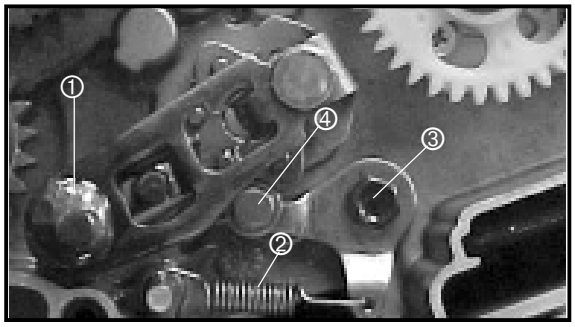
1. Remove :
   - Spacer ①
   - Torsion spring ②
   - Shim ③
   - Ratchet gear ④
   - Shim ⑤
   - Ratchet gear with return spring ⑥
   - Kick axle ⑦

SHIFT SHAFT

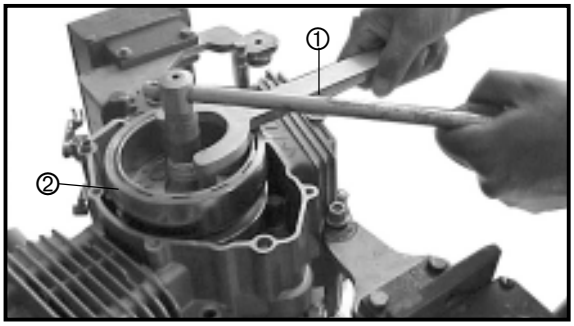
NOTE :

The Shift Shaft can be removed while the Engine is mounted by removing the following parts.

- Shift Pedal
- Kick Crank Assy.
- Crankcase Cover#2(RH)
- Clutch



1. Remove :
   - Shift Shaft ①
   - Torsion Spring ②
   - Bolt (stopper lever) ③
   - Stopper Lever ④



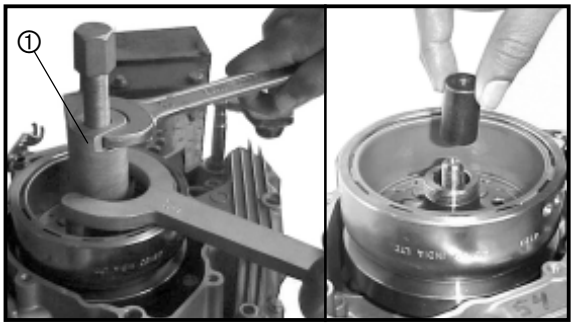
CDI MAGNETO REMOVAL

1. Remove :
   - Nut (magneto)
   - Plain washer

NOTE :

- Loosen the Nut Magneto while holding the Magneto ② with Magneto Holder ①

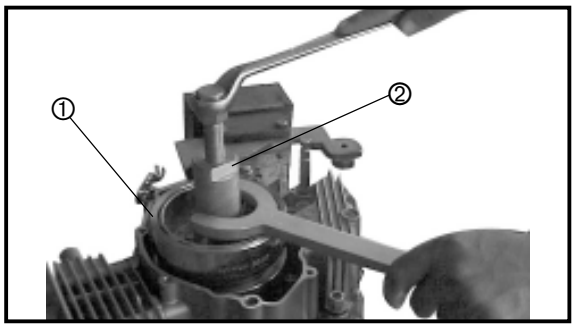
Magneto Holder :
YSST - 627



2. Attach
   - Bush
   - Magneto Puller ①

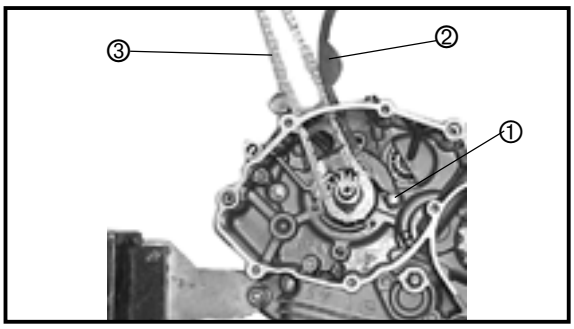
NOTE :

- Place the Bush on the Crankshaft threaded end before using the Magneto Puller to avoid thread damage.

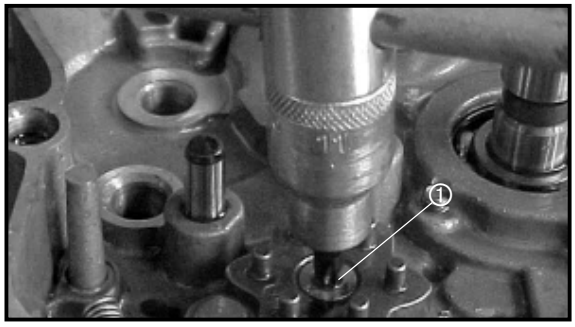


3. Remove :
   - CDI magneto ① using magneto puller ②
   - Key wood-ruff

Magneto Puller :
YSST - 628



4. Remove
   - Bolt ①
   - Guide Stopper# 2 ②
   - Bush
   - Timing chain ③

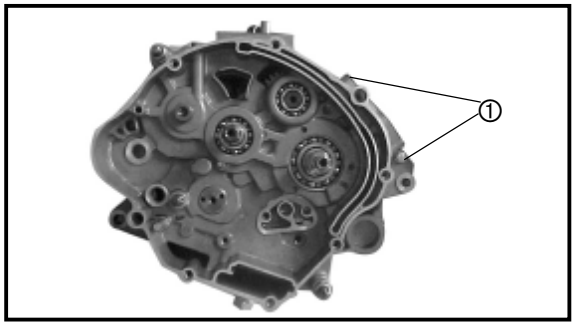


5. Remove :
   - Torx Screw ① (Segment) using Torx Bit.

Torx Bit :
YSST - 611

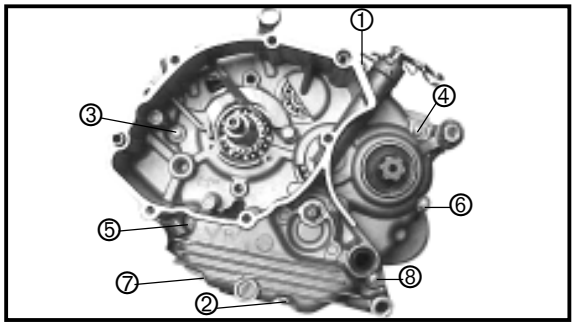
⚠WARNING

Never use Phillips screw driver



CRANKCASE

1. Remove :
   • Bolts (Crankcase RH-2 nos) ①



2. Remove :
   • Bolts (Crankcase LH-8 nos)

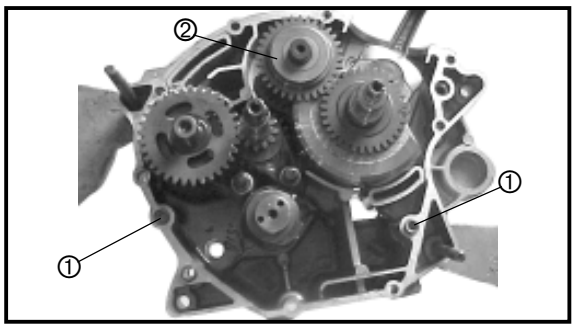
NOTE :

• Loosen the Bolts in a crisscross pattern.
• Loosen each Bolts 1/4 turn at a time and remove them after all are loose.

1. Remove :
   • Right crankcase half

NOTE :

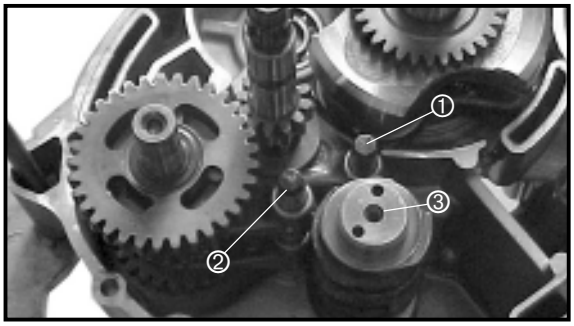
Open the Engine stand mounting Nuts 2 nos . Then separate the Crankcase by using the flat head screw driver in the separating slit ⓐ.



CAUTION:

• Do not use the flat head screw driver except at the separating slot.
• Separate the Crankcase after first checking that the shift cam segments and the Drive Axle Circlip can be removed.
• Do not damage the Crankcase mating surfaces.

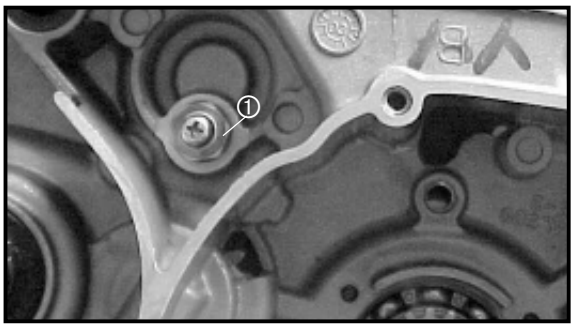
2. Remove :
   • Dowel pins ①
   • Balancer ②



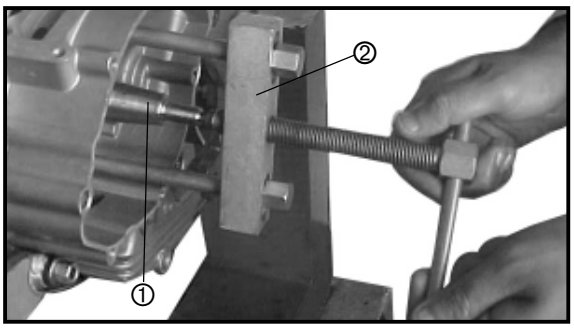
TRANSMISSION AND SHIFTER

1. Remove :
   - Shift Fork Guide Bar ① (short)
   - Shift Fork Guide Bar ② (long)
   - Shift Cam ③
   - Shift Fork -C
   - Shift Fork -R
   - Shift Fork - L

2. Remove :
   - Axle Drive assembly ①
   - Axle Main assembly ②
   - Push Rod # 2
   - Washer
   - Push Lever Assembly
   - Lock
   - Oil Seal



3. Remove :
   - Neutral switch ①
   - Gasket neutral switch



CRANKSHAFT

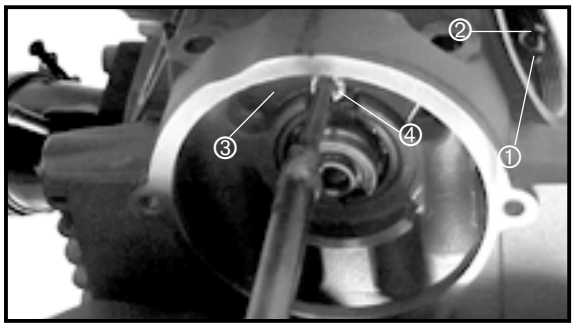
1. Attach
   - Crankshaft Removal Tool ②

	Crankshaft Removal Tool : **YSST - 265**

2. Remove :
   - Crankshaft ① using Crankshaft removal tool ②

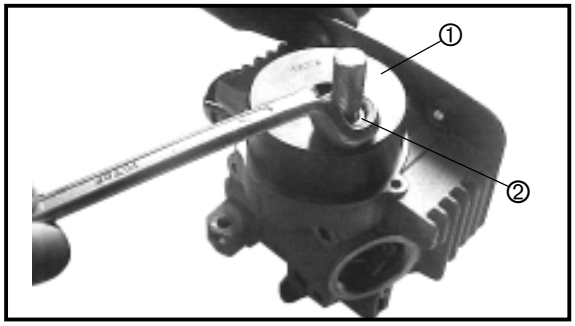
NOTE :

Fully tighten the Crankshaft removal tool holding Bolts, but make sure that the tool body is parallel with the Crankcase. If necessary, one holding bolt may be turned out slightly to adjust the Crankshaft Removal Tool's position.



DISASSEMBLY OF CYLINDER HEAD, ROCKER ARMS, CAMSHAFT AND VALVES

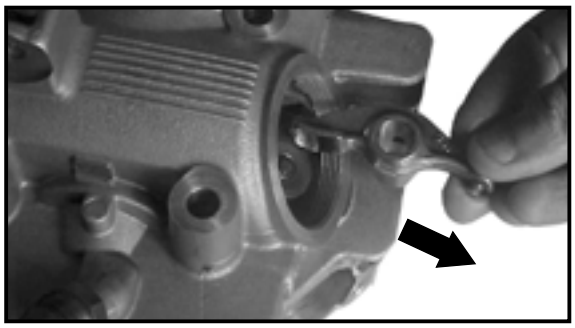
1. Loosen :
   - Valve Adjuster Locknuts ①
   - Valve Adjusters ②
2. Remove :
   - Stopper Plate ③ by opening allen bolt ④



3. Attach
   - Rocker arm shaft puller ①

	Rocker Arm Shaft Puller **YSST - 608A**

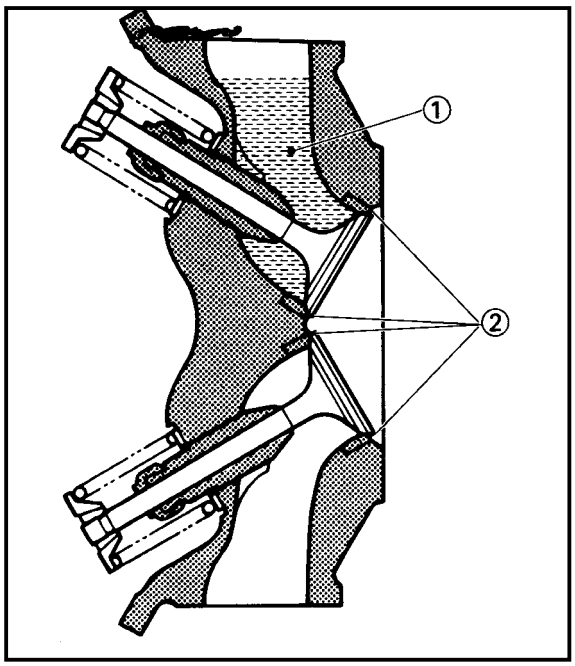
4. Remove :
   - Rocker Arm Shafts by tightening the Puller nut ②
   - Rocker Arms (intake/exhaust)



5. Remove :
   - Camshaft Assy with spacer

NOTE :

Before the Valves, Valve Springs, Valve Stem Seals, etc. are removed from the Cylinder Head, the Valve sealing should be checked.



6. Check
   - Valve sealing
     Leakage at the valve seat ➔ Inspect the valve face, valve seat and seat width.
     Refer to “INSPECTION AND REPAIR VALVE SEAT”. on Chapter 4 Page no 4-16

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Checking Steps :

- Pour clean petrol ① into the intake and exhaust ports.
- Check the valve sealing. There should be no leakage at the valve seat ②

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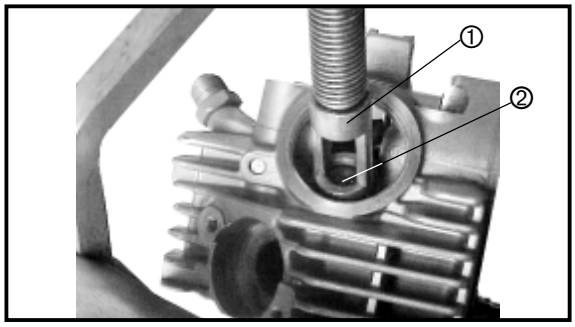
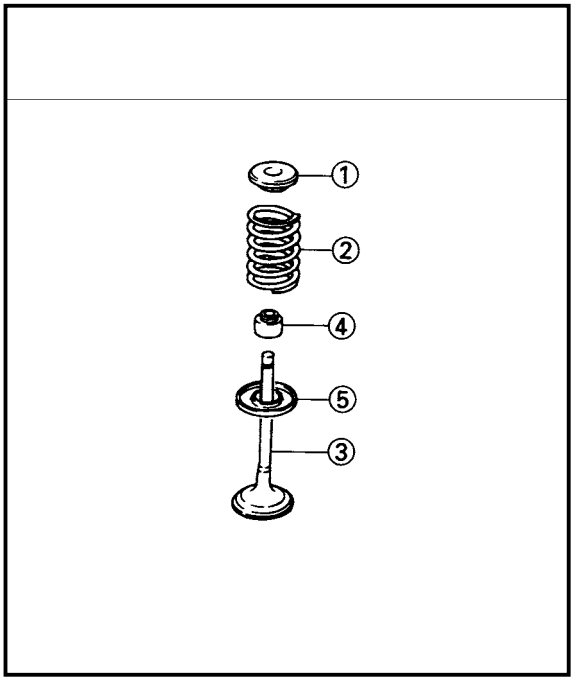


7. Attach
   Valve Spring compression Tool ①

	Valve Spring Compressor : YSST - 603

8. Remove :
   • Valve Cotters ②

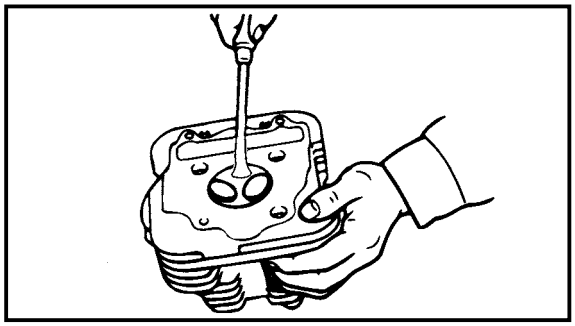
NOTE :
Valve Spring compressor tool is to be attached between the Valve Spring retainer and the Valve face (Inlet and Exhaust) one at a time.



9. Remove :
   • Valve Spring Retainer ①
   • Valve Spring ②
   • Valve ③
   • Valve Stem Seal ④
   • Valve Spring Seat ⑤

NOTE :
Identify the position of each part very carefully so that it can be reinstalled in its original place.

INSPECTION AND REPAIR



CYLINDER HEAD

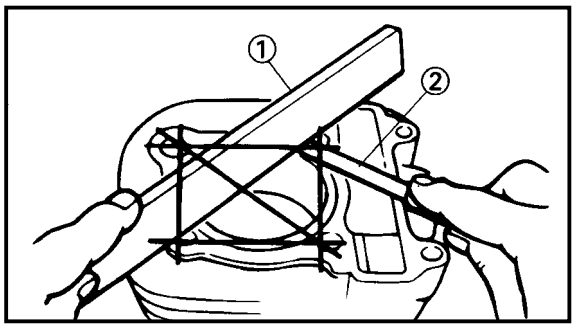
1. Remove :
   - Carbon deposits from combustion chambers using a rounded scraper.

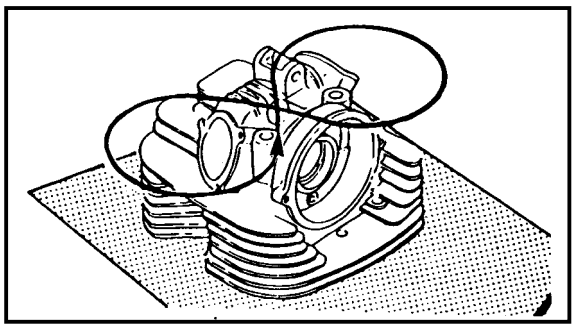
NOTE :

Do not use a sharp instrument to avoid damaging or scratching :
- Spark Plug threads
- Valve seats

2. Inspect :
   - Cylinder Head

   Scratches/damage ➔ Replace





3. Measure :
   - Cylinder Head warpage

   Out of specification ➔ resurface/ replace.

	Cylinder Head warpage : Less than 0.03 mm

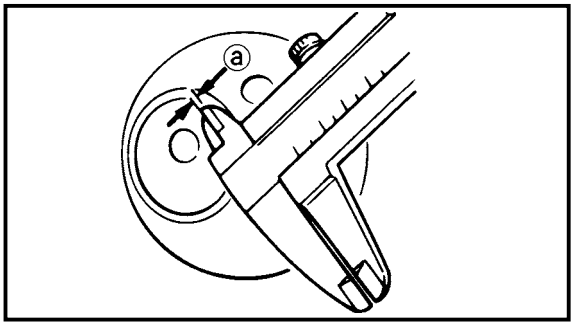
****

Warpage measurement and resurfacement steps:
- Place a straightedge ① and a feeler gauge ② across the Cylinder Head.
- Measure the warpage.
- If the warpage is out of specification, resurface the Cylinder Head/replace if necessary.
- Place a 400 ~ 600 grit wet abrasive paper on the surface plate, and resurface the Head using a figure-eight sanding pattern.

NOTE :

Rotate the Cylinder Head several times for an even resurfacement.

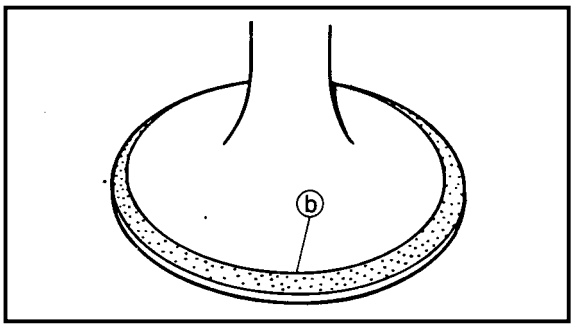
****

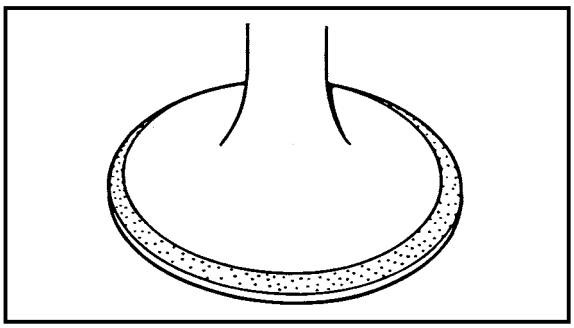


VALVE SEATS

1. Remove :
   - Carbon deposits from the Valve Face and Valve Seat.
2. Inspect :
   - Valve Seats
     Pitting/wear ➔ reface the valve seat.
3. Measure :
   - Valve Seat width ⓐ
     Out of specification ➔ Reface the Valve Seat.

Valve seat width :
Intake :
0.9 ~ 1.1 mm
<Limit : 1.6 mm>
Exhaust :
0.9 ~ 1.1 mm
<Limit : 1.6 mm>





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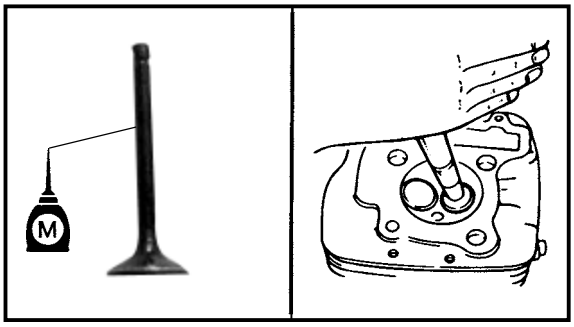
Measurement steps :

- Apply Mechanic's blueing dye (Dykem) ⓑ to the valve face.
- Install the Valve in the Cylinder Head
- Press the Valve through the Valve Guide and onto the valve seat to make a clear pattern.
- Measure the Valve Seat width. Where the Valve Seat and Valve Face made contact, blueing will have been removed.
- If the Valve Seat is too wide, too narrow, or the seat is not centered, the valve seat must be refaced.

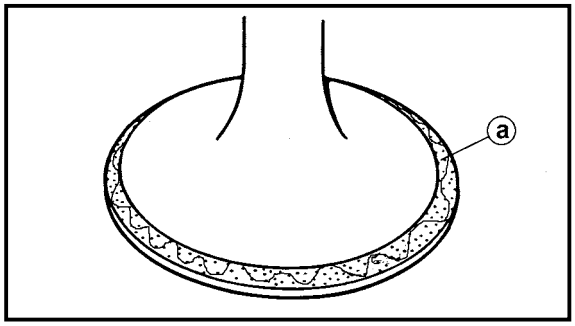
****



4. Lap :
   - Valve face
   - Valve seat

NOTE :

After refacing the Valve Seat or replacing the Valve, the Valve Seat and Valve Face should be lapped.



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Lapping steps :

• Apply coarse lapping compound ⓐ to the Valve Face

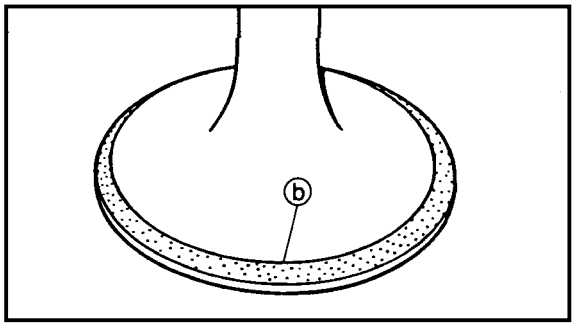
CAUTION:

Do not let compound enter the gap between the Valve Stem and the Guide.

• Apply molybdenum disulfide oil to the Valve Stem.
• Install the Valve into the Cylinder Head.
• Turn the Valve in one Direction using the Valve lapping tool until the Valve Face and Valve Seat are evenly polished, then clean off all compound.

NOTE :

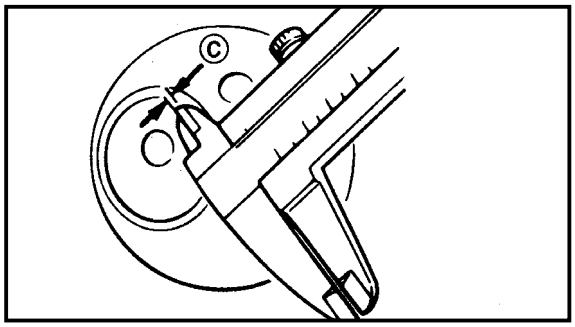
For best lapping results, lightly tap the Valve seat while rotating the Valve.



• Apply a fine lapping compound ⓑ to the Valve face and repeat the above steps.

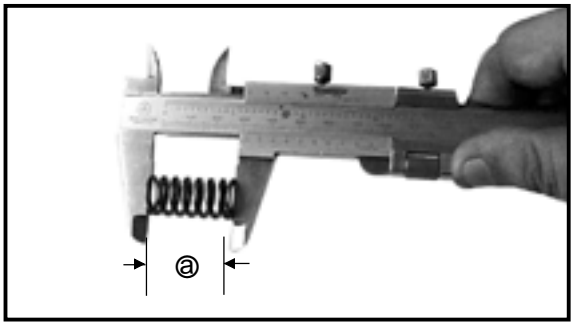
NOTE :

Make sure to clean off all compound from the Valve face and Valve seat after every lapping operation.



• Apply Mechanic's blueing dye (Dykem) ⓑ to the Valve face.
• Install the Valve in the Cylinder Head.
• Press the Valve through the Valve Guide and onto the Valves Seat to make a clear pattern.
• Measure the Valve Seat width © again. If the Valve Seat width is out of specification, lap the Valve and Valve Seat.

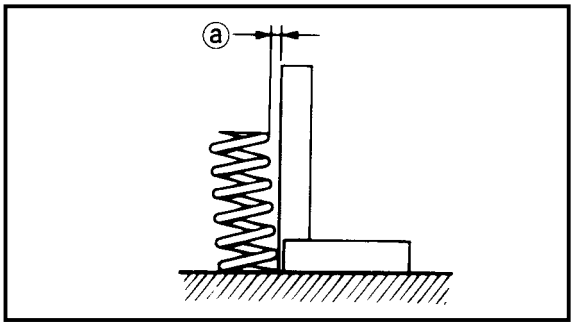
****



VALVE SPRINGS AND VALVES

1. Measure :
   • Valve Spring free length ⓐ
   Out of specification ➔ Replace.

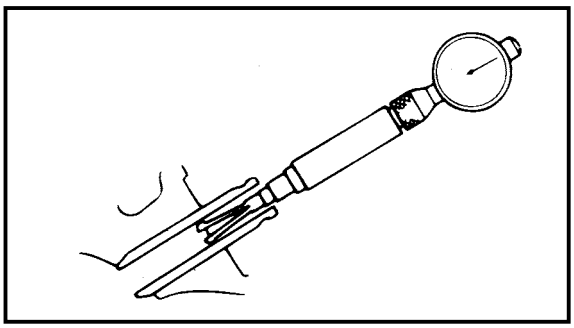
Valve spring free length :
39.62 mm
<Limit 38.17 mm>



2. Measure :
   • Spring tilt ⓐ
   Out of specification ➔ Replace

Spring Tilt Limit :
1.7 mm

3. Check
   • Spring contact face
   Wear/pitting/scratches ➔ Replace



4. Measure :
   • Valve guide inside diameter

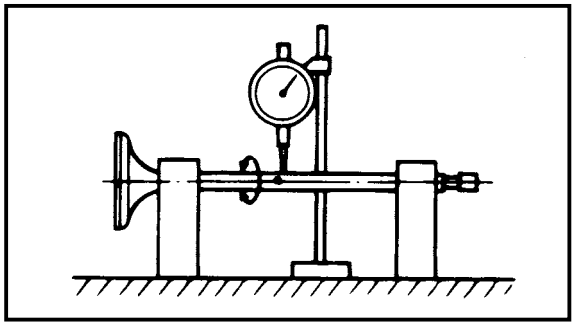
Valve guide inside diameter :
Intake :
5.000 ~ 5.012 mm
<Limit : 5.042mm>
Exhaust :
5.000 ~ 5.012 mm
<Limit : 5.042mm>

5. Measure :
   Valve stem diameter

6. Calculate :
   Stem Guide Clearance
   Stem-to-guide clearance =
   Valve guide inside diameter –
   Valve stem diameter

Stem-to-guide clearance limit :
Intake :
0.010 ~ 0.00370 mm
<limit : 0.08 mm>
Exhaust :
0.025 ~ 0.052 mm
<limit : 0.10 mm>

Out of specification ➔ Replace the Cylinder Head

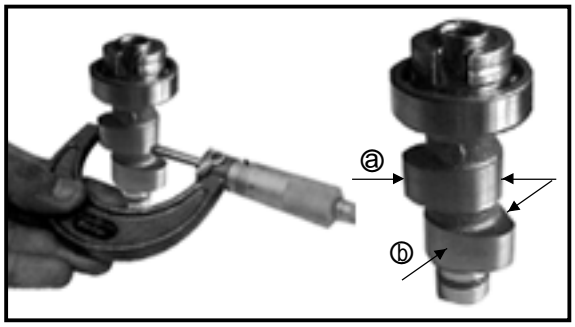


7. Measure :
   • Runout (valve stem)
   Out of specification ➔ Replace

Runout Limit :
0.01 mm

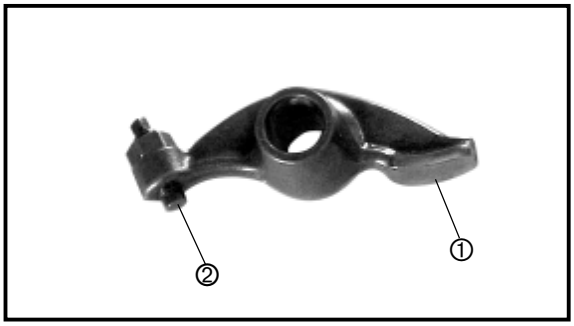
CAMSHAFT INSPECTION

1. Inspect :
   • Cam lobes
   Pitting/scratches/blue discoloration ➔ Replace
2. Measure :
   • Cam lobes dimension ⓐ and ⓑ
   Out of specification ➔ Replace.



Cam lobes dimension :
Intake :
ⓐ 25.881 ~ 25.981 mm
<limit 25.851 mm>
ⓑ 21.195 ~ 21.295 mm
<limit 21.165 mm>
Exhaust :
ⓐ 25.841 ~ 25.941 mm
<limit 21.811 mm>
ⓑ 21.05 ~ 21.15 mm
<limit 21.02 mm>

3. Inspect :
   • Camshaft oil passage
   Chocked ➔ Blow out oil passage with compressed air.



ROCKER ARMS AND ROCKER ARM SHAFTS INSPECTION

1. Inspect :
   - Cam lobe contact surface ①
   - Adjuster surface ②

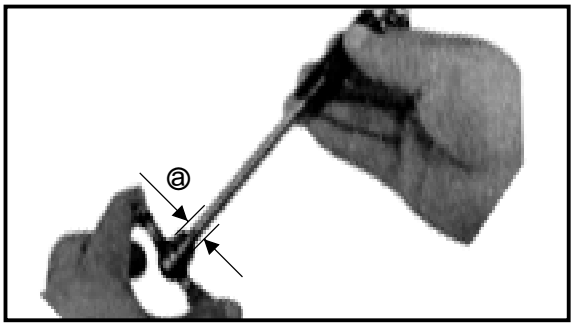
Wear/pitting/scratches/blue discoloration ➔ Replace

****

Inspection steps :

- Inspect the two contact areas on the Rocker Arms for signs of unusual wear.
- Rocker Arm Shaft hole
- Cam-lobe contact surface
  Excessive wear ➔ Replace
- Inspect the surface condition of the Rocker Arm Shafts
  Pitting/scratches/blue discoloration ➔ Replace and check lubrication route
- Measure the inside diameter ⓐ of the Rocker Arm holes

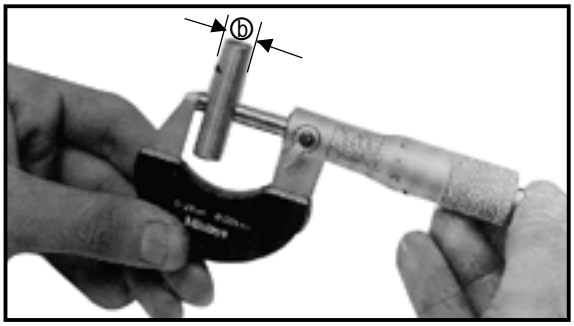
Out of specification ➔ Replace



Inside diameter (Rocker Arm) :
10.000 ~ 10.015 mm
<Limit>:10.03 mm

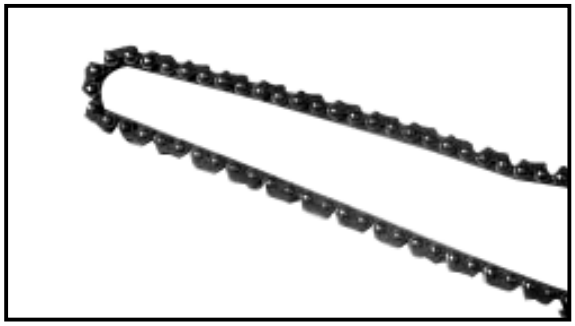
- Measure the outside diameter ⓑ of the Rocker Arm Shafts.

Out of specification ➔ Replace



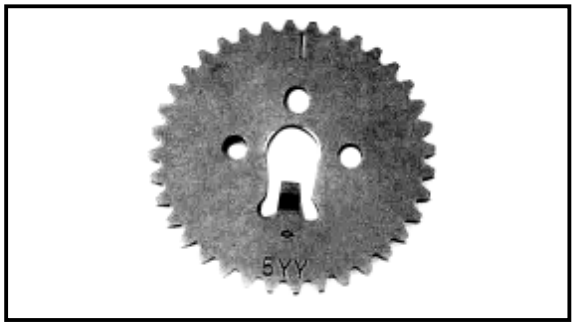
Outside diameter(Rocker Arm Shaft):
9.981 ~ 9.991 mm
<Limit> : 9.95 mm

****

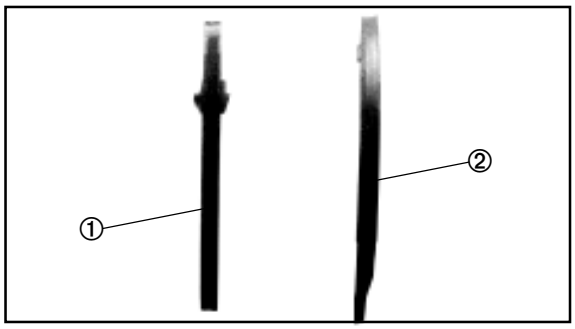


TIMING CHAIN, SPROCKETS AND CHAIN GUIDES

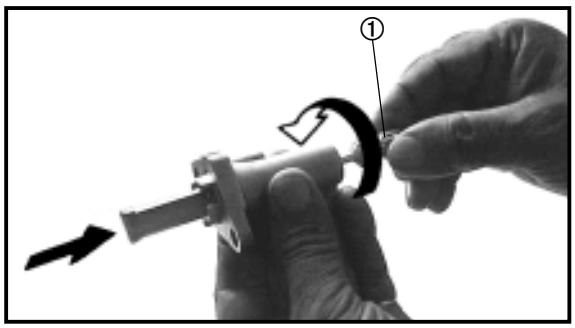
1. Inspect :
   • Timing Chain
   Wear out/Stiffness/damage ➔ Replace the Chain and the Sprockets as a set.



2. Inspect :
   • Cam Sprocket
   Wear/damage ➔ Replace the Cam Sprocket and the timing chain as a set.



3. Inspect :
   • Guide Stopper #1 ①
   • Guide Stopper # 2 ② and Bush
   Wear/damage ➔ Replace



TIMING CHAIN TENSIONER

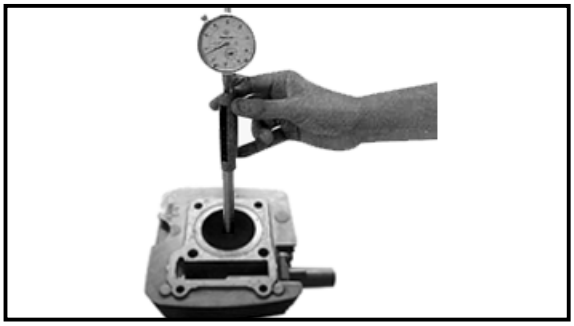
1. Check :
   • One-way Cam operation
   If Unsmooth operation ➔ Replace

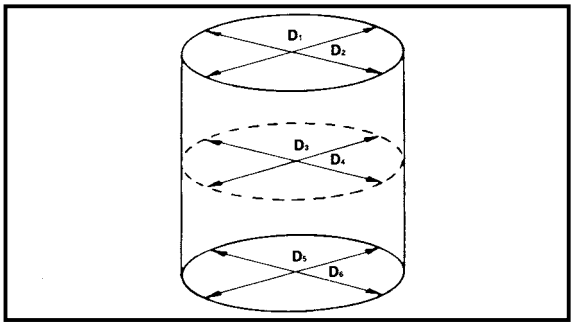
****

Checking steps :

- While pressing the Tensioner Rod lightly with fingers, use a flat screwdriver ① and retract the Tensioner Rod up fully clockwise.
- When releasing the screwdriver by pressing lightly with fingers, make sure that the Tensioner Rod will come out smoothly.
- If not, replace the Tensioner Assembly

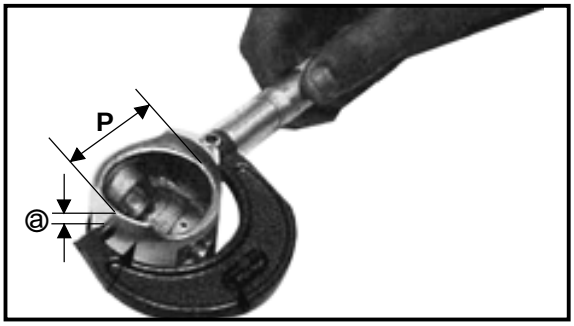
****





Cylinder Bore “C”	54.000 ~ 54.018 mm
Taper limit “T”	0.005 mm
Out of round “R”	0.01 mm

“C”=Maximum Diameter D
“T” = (Maximum D1 or D2) - (Maximum D5 or D6)
“R”= (Maximum D1, D3 or D5)
- (Maximum D2, D4 or D6)



CYLINDER AND PISTONS

1. Inspect :
   - Cylinder and Piston walls
     Vertical scratches ➔ Rebore or replace the Cylinder and the Piston
2. Measure :
   - Piston-to-Cylinder clearance

****

Measurement steps :

1st step :

- Measure the Cylinder Bore “C” with a Cylinder Bore Gauge.

NOTE :

Measure the Cylinder Bore “C” in parallel to and at right angles to the Crankshaft. Then, find the average of the measurements.

- If out of specification, rebore or replace the Cylinder- Piston Kit

2nd step :

- Measure the Piston Skirt diameter “P” with a Micrometer.
  @ 4.5 mm from the Piston bottom edge

Piston size p	
Standard	**53.977 ~ 53.996 mm**
Oversize	**Ist**
	II nd

- If out of specification, replace the Piston and the Piston Rings as a set.

3rd step:

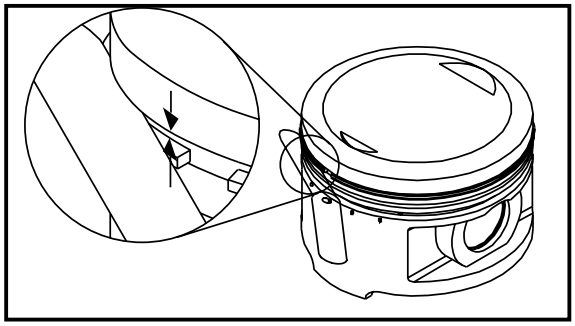
- Calculate the Piston-to Cylinder clearance using the following formula :

Piston-to-Cylinder clearance = Cylinder Bore “C”– Piston Skirt diameter “P”

Piston-to-Cylinder clearance : 0.020 ~ 0.027 mm

- If out of specification, rebore or replace the Cylinder, and replace the Piston and Piston Rings as a set

****



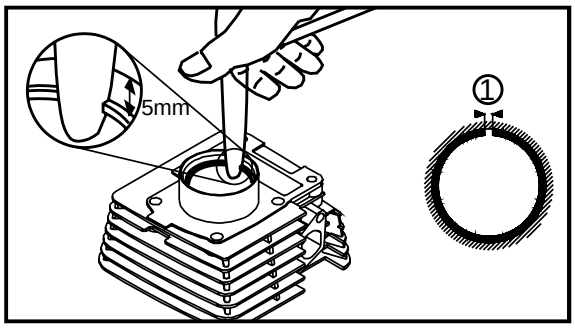
PISTON RING INSPECTION

1. Measure :
   • Side clearance
   Out of specification ➔ Replace the Piston and the Piston Rings as a set

NOTE :

Remove the carbon deposits from the Piston Ring Grooves and Rings before measuring the side clearance.

Side clearance :
Top Ring : <Limit>
0.030 ~ 0.07 mm
2nd Ring : <Limit>
0.020 ~ 0.060 mm



2. Position :
   • Piston Ring
   (in the Cylinder bore)

NOTE :

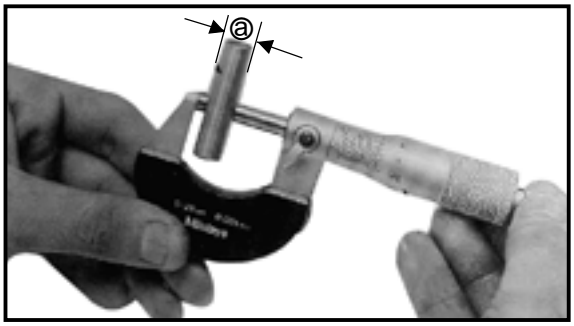
Push the Ring with the Piston Crown so that the Ring will be at right angles to the Cylinder Bore 5 mm from the bottom side.

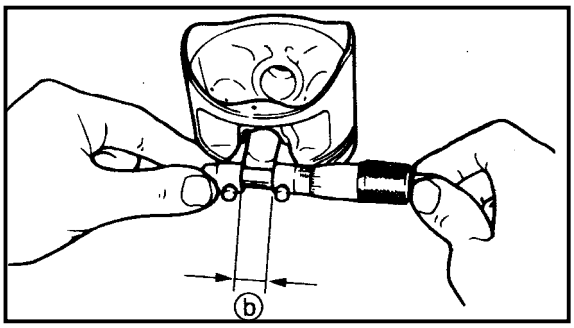
3. Measure :
   • End gap ① using a feeler gauge
   Out of specification ➔ Replace

NOTE :

You cannot measure the end gap on the expander spacer of the Oil Ring, If the Oil Ring Rails show excessive gap, replace all three Rings.

Eng gap :
Top Ring : 0.10 ~ 0.30 mm
<limit> : <0.40 mm>
2nd Ring : 0.30 ~ 0.45 mm
<Limit> : <0.55 mm>
Oil Ring : 0.2 ~ 0.7 mm





PISTON PIN INSPECTION

1. Inspect :
   • Piston Pin
   Blue discoloration/grooves ➔ Replace and inspect the lubrication system
2. Measure :
   • Piston Pin-to-Piston clearance

****

Measurement steps.

• Measure the Piston Pin outside diameter ⓐ using a micrometer. If out of specification, replace the Piston Pin.

Outside diameter (Piston Pin):
14.995 ~ 15.000 mm
<Limit:> : 14.975 mm

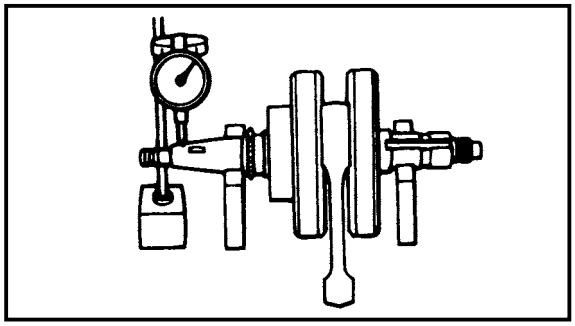
• Measure the Piston Pin hole inside diameter ⓑ using a Internal Micrometer
• Calculate the Piston Pin -to-Piston clearance using the following formula :

Piston Pin-to-Piston clearance =
Bore size (Piston Pin) ⓑ – Outside diameter (Piston Pin) ⓐ

• Out of specification ➔ replace the Piston

Clearance (Piston Pin to Piston) :
0.009 ~ 0.013 mm

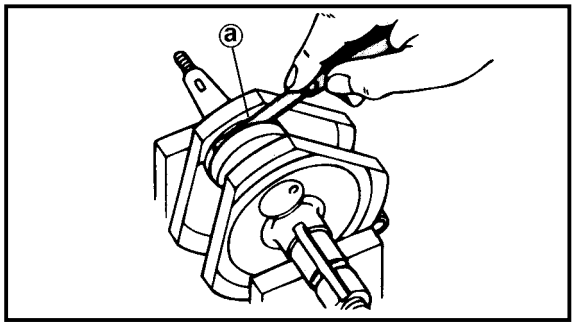
****



CRANKSHAFT

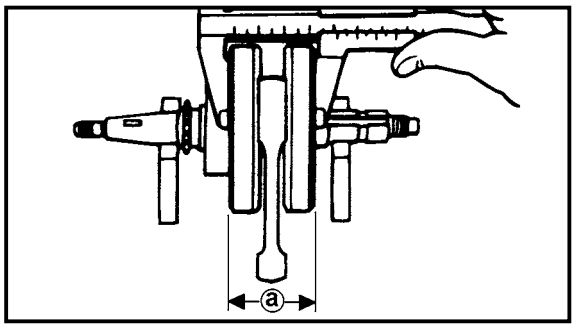
1. Measure :
   • Crankshaft runout, using a Surface plate and Dial gauge. Keep the Crankshaft on V blocks and rotate slowly while measuring.
   Out of spescification ➔ Replace

	Runout : 0.01 mm **<limit> : <0.03 mm>**



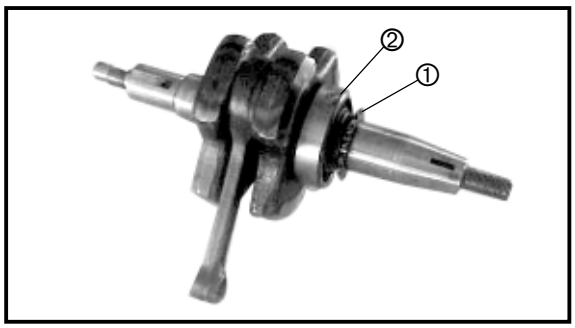
2. Measure :
   • Big end side clearance ⓐ using a Feeler Gauge
   Out of specification ➔ Replace big end Bearing , Crank Pin and Connecting Rod

	Big end side clearance : **0.15 ~ 0.45 mm**

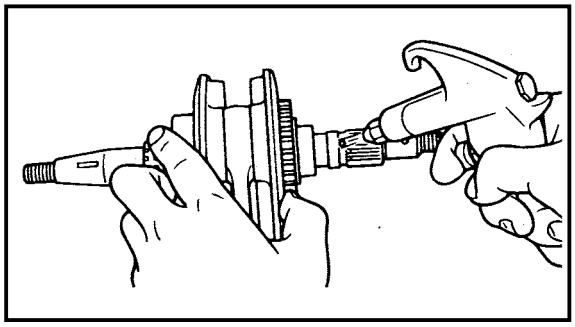


3. Measure :
   • Crank width ⓐ
   Out of specification ➔ Replace Crankshaft.

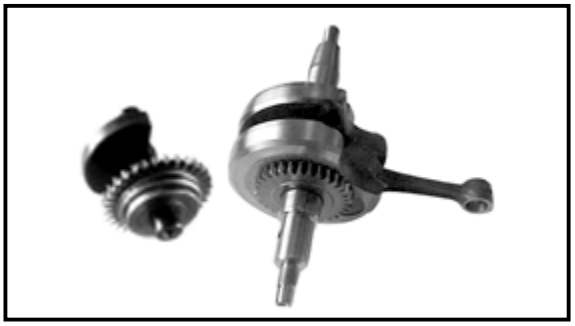
	Crank width : **46.95 ~ 47.00 mm**



4. Inspect :
   • Crankshaft Sprocket ①
   Wear/damage ➔ Replace Crankshaft
   • Bearing ②
   Wear/crack/damage ➔ Replace Crankshaft



5. Inspect :
   • Crankshaft journal oil passage
   Clogged ➔ Blow the oil passage with compressed air



BALANCER WEIGHT INSPECTION

1. Inspect:
- Balancer drive gear teeth ①
- Balancer driven gear teeth ②

Wear/damage ➔ Replace as a set

2. Inspect:
- Balancer Shaft
- Wear/bend/damage➔ Replace

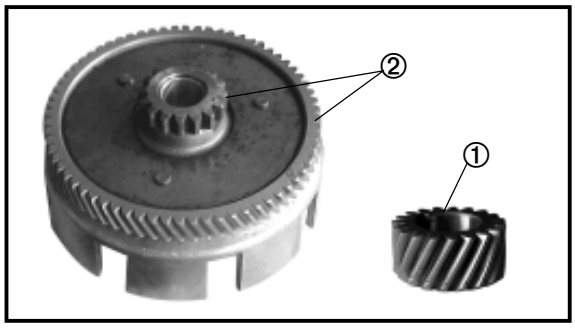
PRIMARY DRIVE GEAR INSPECTION

1. Inspect :
   - Primary Drive Gear teeth ①
   - Primary Driven Gear teeth ②

   Wear/damage ➔ Replace both Gears as a set.

NOTE :

Refer the general specification for grading.



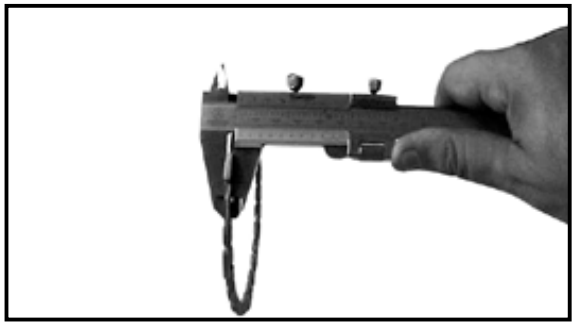
Excessive noise during operation ➔ Replace both Gears as a set.

CLUTCH INSPECTION

1. Inspect :
   - Friction Plates

   Wear/damage ➔ Replace the Friction Plates as a set
2. Measure :
   - Friction Plate thickness ⓐ using a Vernier Calliper at four points.

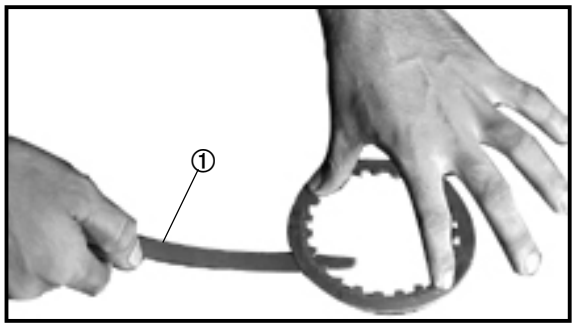
   Out of specification ➔ Replace the Friction Plates as a set



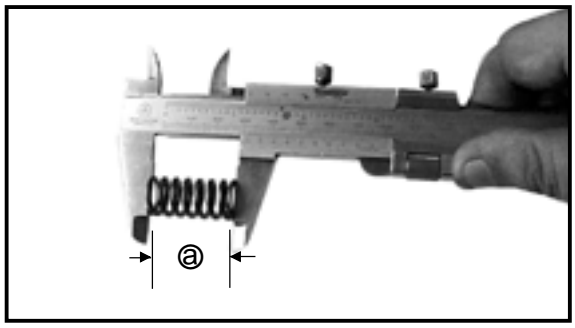
Thickness (Friction Plate) :
3.0 ~ 3.1 mm
<Limit>: <2.8 mm>

3. Inspect :
   - Clutch Plates for damage
   - Clutch Plate Warpage Using a Surface Plate and a Feeler Gauge ①

   Out of specification ➔ Replace the Clutch Plates as a set

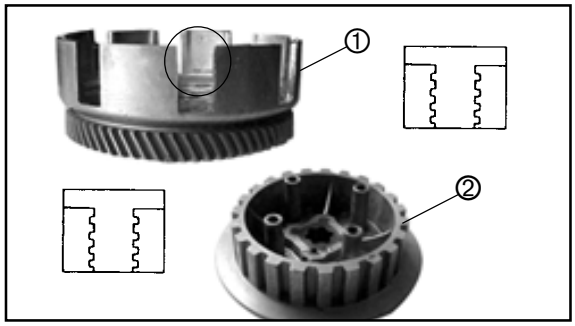


Warp limit (Clutch Plate):
Less than 0.05 mm



4. Inspect :
   • Clutch Springs
   Damage ➔ Replace the Clutch springs as a set.
5. Measure
   • Free length (Clutch Spring) ⓐ
   Out of specification ➔ Replace the Clutch springs as a set.

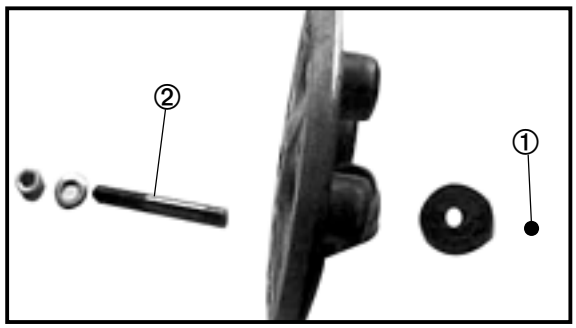
Free length (Clutch Spring) :
32.0 mm
<Limit> : 30.5 mm



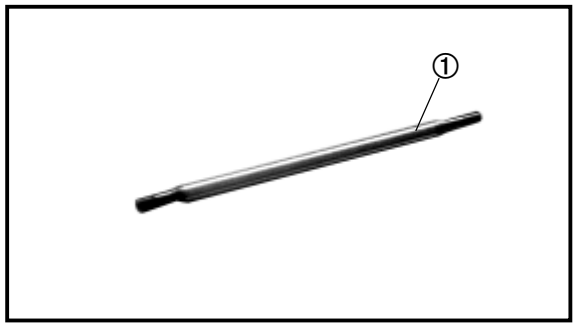
6. Inspect :
   • Dogs on the Primary Driven Gear ①
   Scoring/wear/damage ➔ Deburr or replace
   • Clutch Boss Splines ②
   Scoring/wear/damage ➔ Replace

NOTE :
Scoring on the Clutch Housing Dogs and the Clutch Boss Splines will cause erratic operation of the clutch.

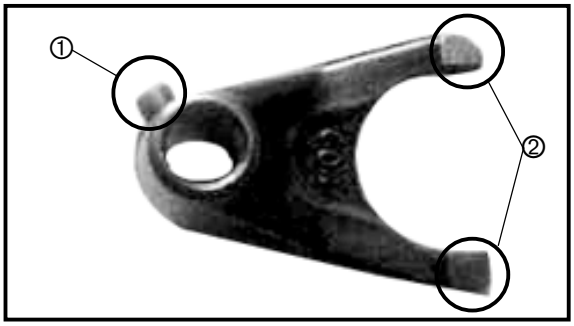
PUSH ROD INSPECTION



1. Inspect :
   • Ball ①
   • Push Rod #1 ②
   Wear/damage/Bend ➔ Replace

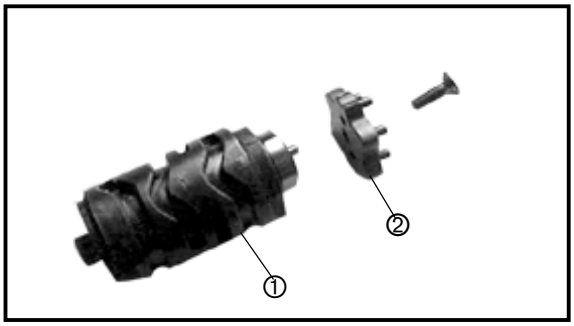


2. Inspect :
   • Push Rod # 2 ①
   Wear/damage/Bend ➔ Replace

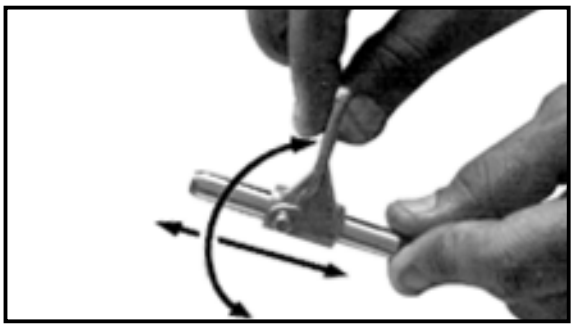


SHIFT FORK SHIFT CAM INSPECTION

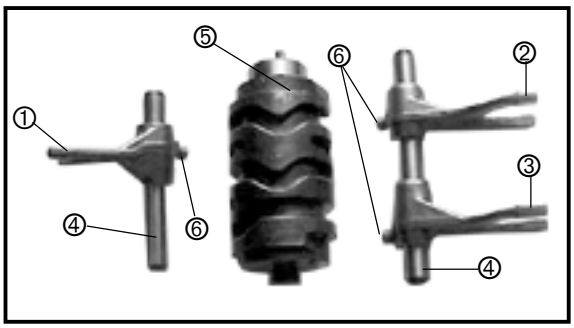
1. Inspect :
   • Shift Fork follower ①
   • Shift Fork Pawl ②
   Scoring/bends/wear/damage ➔ Replace



2. Inspect :
   • Shift Cam grooves ①
   Wear/damage/scratches ➔ Replace
   • Shift Cam Segment ②
   Wear/damage ➔ Replace



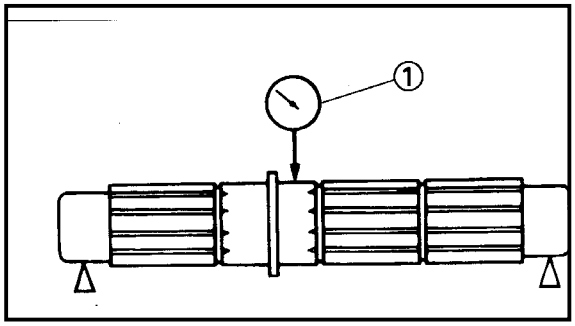
3. Check :
   • Shift Fork movement
   (on the Guide Bar)
   Unsmooth operation ➔ Replace the Shift Fork and the Guide Bar



4. Inspect :
   The assembly for proper working
   • Shift Fork “C” (center) ①
   • Shift Fork “R” (right) ②
   • Shift Fork “L” (left) ③
   • Guide bars (small and big) ④
   • Shift Cam ⑤
   • Shift fork cam follower ⑥
   Roll the Guide Bar on a flat surface
   Bent ➔ Replace

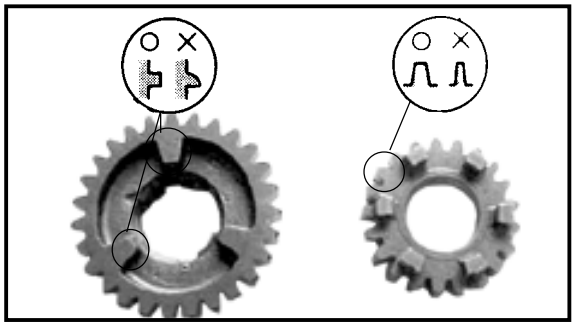
⚠WARNING

Do not attempt to straighten a Bend Guide Bar.

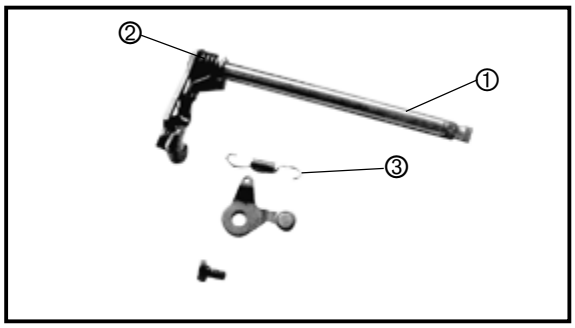


5. Measure :
   • Axle runout (Main and Drive)
   Use a centering device and a dial gauge ①
   Out of specifications ➔ Replace the bent Axle

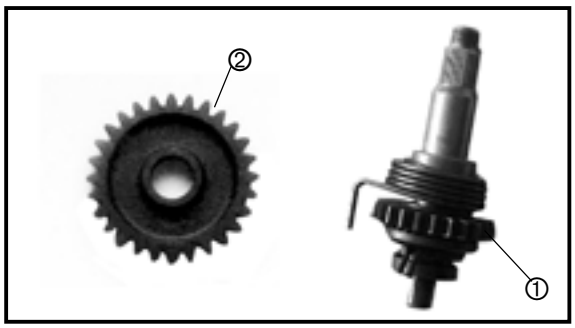
	Runout : 0.01 mm **<limit> : 0.03 mm**



6. Inspect :
   • Gear teeth
   Blue discoloration/pitting/wear ➔ Replace
   • Mated Dogs
   Rounded edges/cracks/missing portions ➔ Replace

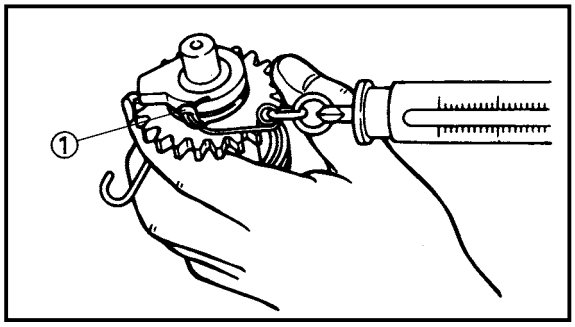


7. Inspect :
   • Shift Shaft ①
   Damage/bent/wear ➔ Replace
   • Return spring (shift shaft) ②
   • Return Spring (stopper lever) ③
   Wear/damage ➔ Replace



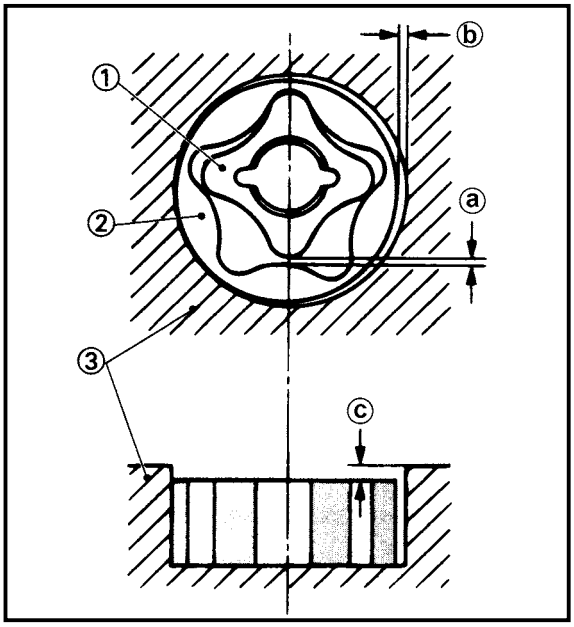
KICK STARTER INSPECTION

1. Inspect :
   • Gear teeth (kick Gear) ①
   • Gear teeth (Idle Gear) ②
   Wear/damage ➔ Replace



2. Measure :
   • Torsion spring ① force Using a Spring Gauge
   Out of specification ➔ Replace

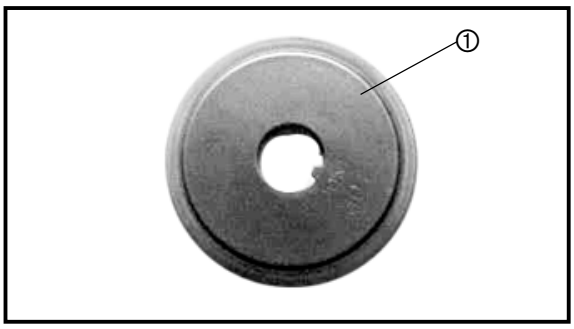
	Kick Clip friction force : **0.8 ~ 1.2 kg**



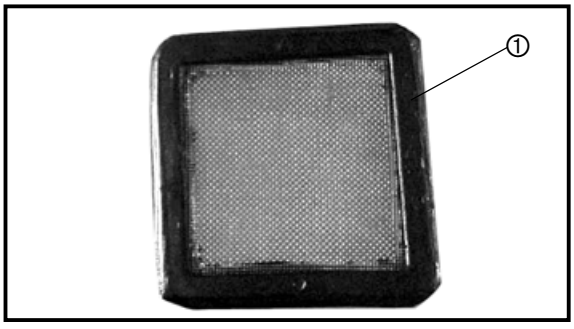
OIL PUMP INSPECTION

1. Measure :
   - Tip clearance ⓐ
     (between the inner rotor ① and the outer rotor ②) using feeler gauge.
   - Side clearance ⓑ
     (between the outer rotor ② and the Pump Housing ③) using feeler gauge
     Out of specification ➔ Replace the Oil Pump Assembly
   - Housing and Rotor clearance ⓒ
     (between the Pump Housing ③ and the Rotors ① and ②)
     Out of specification ➔ Replace the Oil
   - Pump Assembly
     Damage ➔ Replace
     Contamination ➔ Clean with flushing oil.

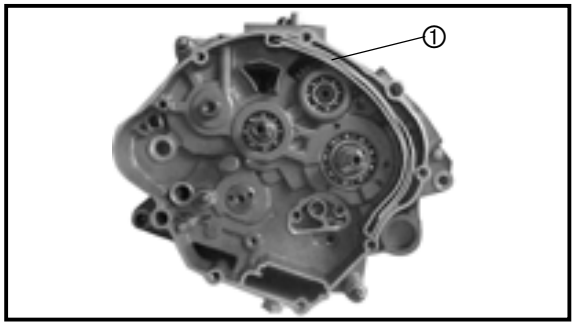
Tip clearance ⓐ
0.15 mm <Limit:0.20 mm>
Side clearance ⓑ:
0.06 ~ 0.10 mm
<Limit: 0.15 mm>
Housing and Rotor clearance ⓒ:
0.06 ~ 0.10 mm
<Limit: 0.15 mm>



2. Inspect :
   - Rotary Filter ①
     Cracks/damage/choked ➔ Replace
     Contamination ➔ Clean with flushing oil



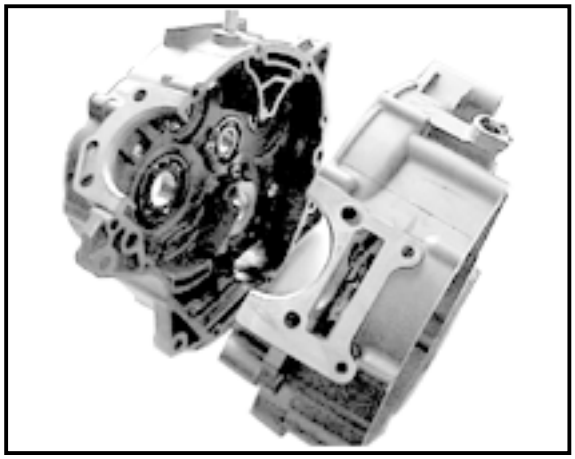
3. Inspect :
   - Oil strainer ①
     Damage ➔ Replace
     Contamination ➔ Clean with flushing oil.



DELIVERY PASSAGE INSPECTION

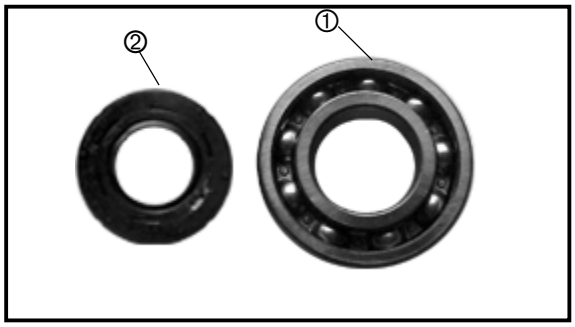
CRANK CASE RH

1. Check :
   • Oil delivery passage ①
   Blockage ➔ Blow the passage with compressed air.



CRANKCASE

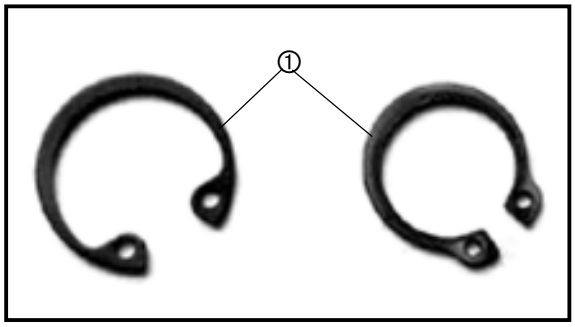
1. Thoroughly wash the crankcase L.H. & R.H. in mild solvent.
2. Thoroughly clean all the Gasket Mating surfaces and Crankcase Mating surfaces using solvent.
3. Inspect :
   • Crankcase
   Cracks/damage ➔ Replace
   • Oil delivery passages
   Blockage ➔ Blow the passages with compressed air



BEARINGS AND OIL SEALS

1. Inspect :
   • Bearings ①
   Clean with solvent and lubricate with multigrade oil, then rotate the bearing using finger
   Roughness/noise ➔ Replace

2. Inspect :
   • Oil Seals ②
   Damage/ wear ➔ Replace



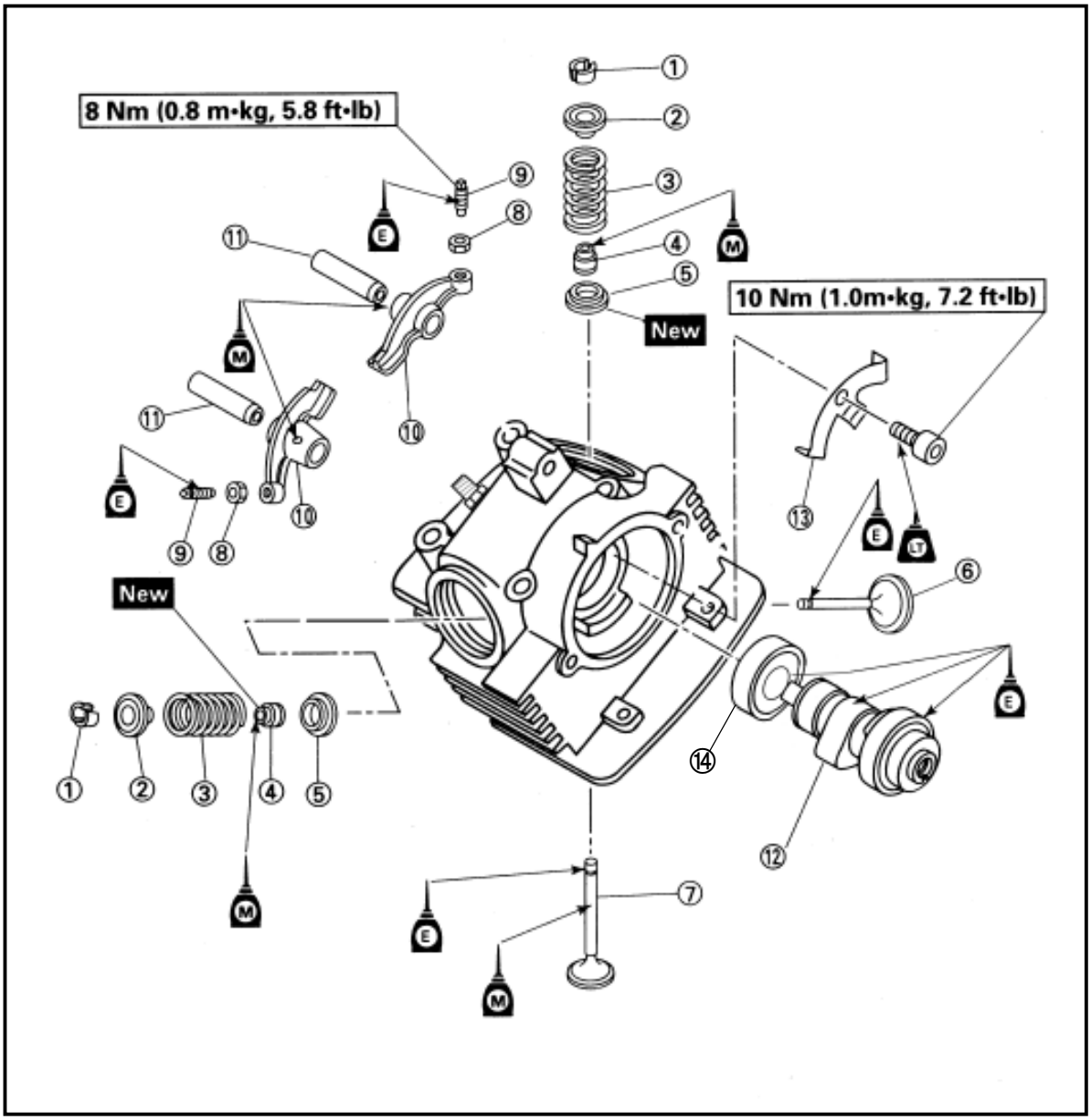
CIRCLIPS AND WASHERS

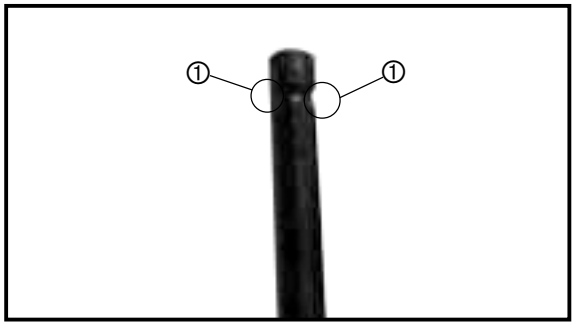
1. Inspect :
   • Circlips ①
   • Washers
   Damage/looseness/bends ➔ Replace

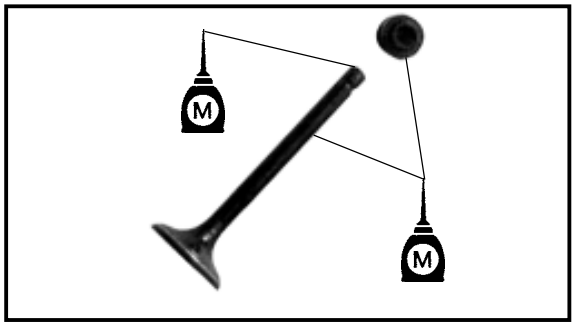
ENGINE ASSEMBLY AND ADJUSTMENTS

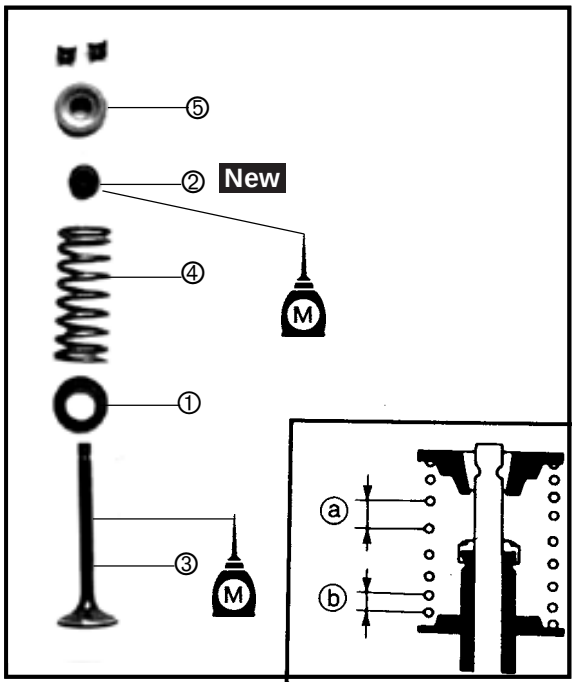
VALVES, ROCKER ARM AND CAMSHAFT

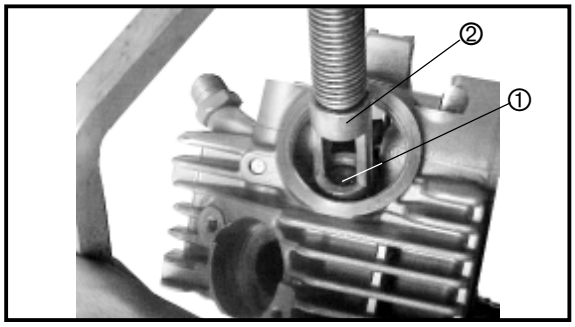
① Valve Cotters
② Valve Spring Retainer
③ Valve Springs
④ Valve Stem Seal
⑤ Valve Spring seat
⑥ Valve (intake)
⑦ Valve (exhaust)
⑧ Lock Nut
⑨ Adjuster
⑩ Valve Rocker Arm
⑪ Rocker Arm Shaft
⑫ Camshaft
⑬ Plate
⑭ Bearing











⚠WARNING

For Engine Assembly, replace the following parts with new ones :

- **O-Rings**
- **Gaskets**
- **Oil Seals**
- **Copper Washers**
- **Lock Washers**
- **Circlips**

VALVES AND VALVE SPRINGS INSTALLATION

1. Deburr :
   - Valve Stem end ① Using an Oil Stone for smoothing.
2. Apply :
   - Molybdenum disulfide oil on the Valve Stem and Oil Seal

	Molybdenum Disulfide Oil

3. Install :
   - Valve Spring Seat ①
   - Valve Stem Seal ② **New**
   - Valve ③ in the valve guide(Cylinder Head)
   - Valve Spring ④
   - Spring retainer ⑤

NOTE :

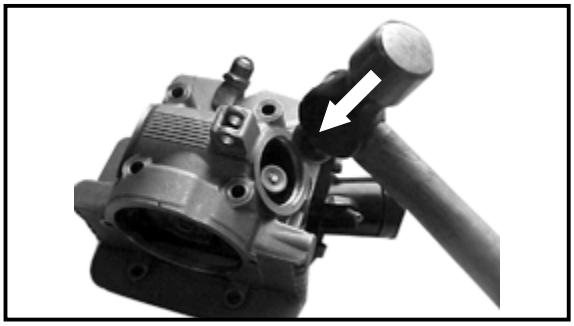
Install the Valve Spring with the small pitch ⓑ facing downward
ⓐ facing upwards
ⓑ facing downward

4. Install :
   - Valve Cotters ①

NOTE :

Install the Valve Cotters while compressing the valve spring with Valve Spring compressor ②

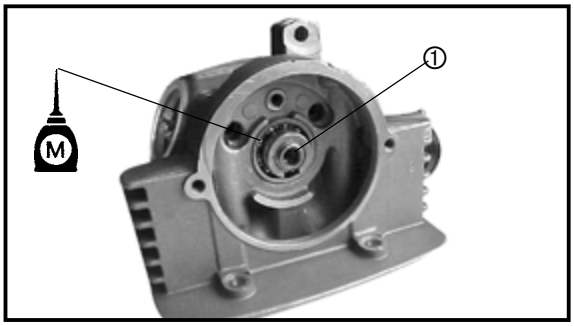
	Valve Spring Compressor : YSST - 603



5. Secure the Valve Cotters onto the Valve Stem by tapping lightly with a mallet

CAUTION:

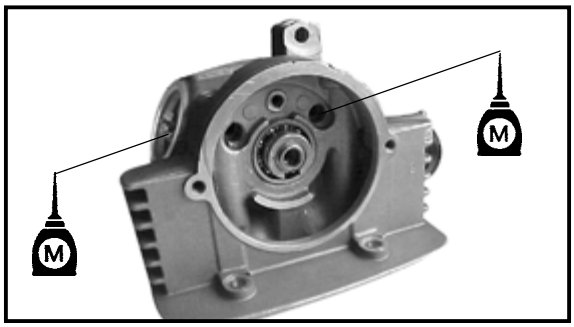
Do not hit so much as to damage the Valve



CAMSHAFT AND ROCKER ARM INSTALLATION

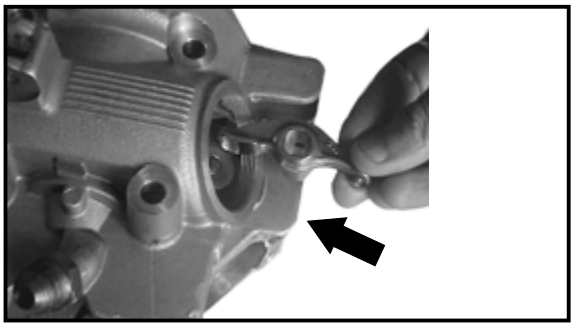
1. Lubricate :
   • Camshaft ①

	Camshaft and Camshaft bearing : Multigrade engine oil.

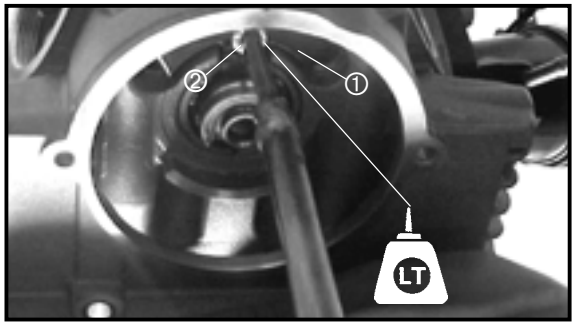


2. Apply :
   • Molybdenum disulfide oil on the rocker arm and Rocker Arm Shaft

	Molybdenum disulfide oil



3. Install :
   • Rocker Arm as shown in figure
   • Rocker Arm Shaft by pushing it in completely

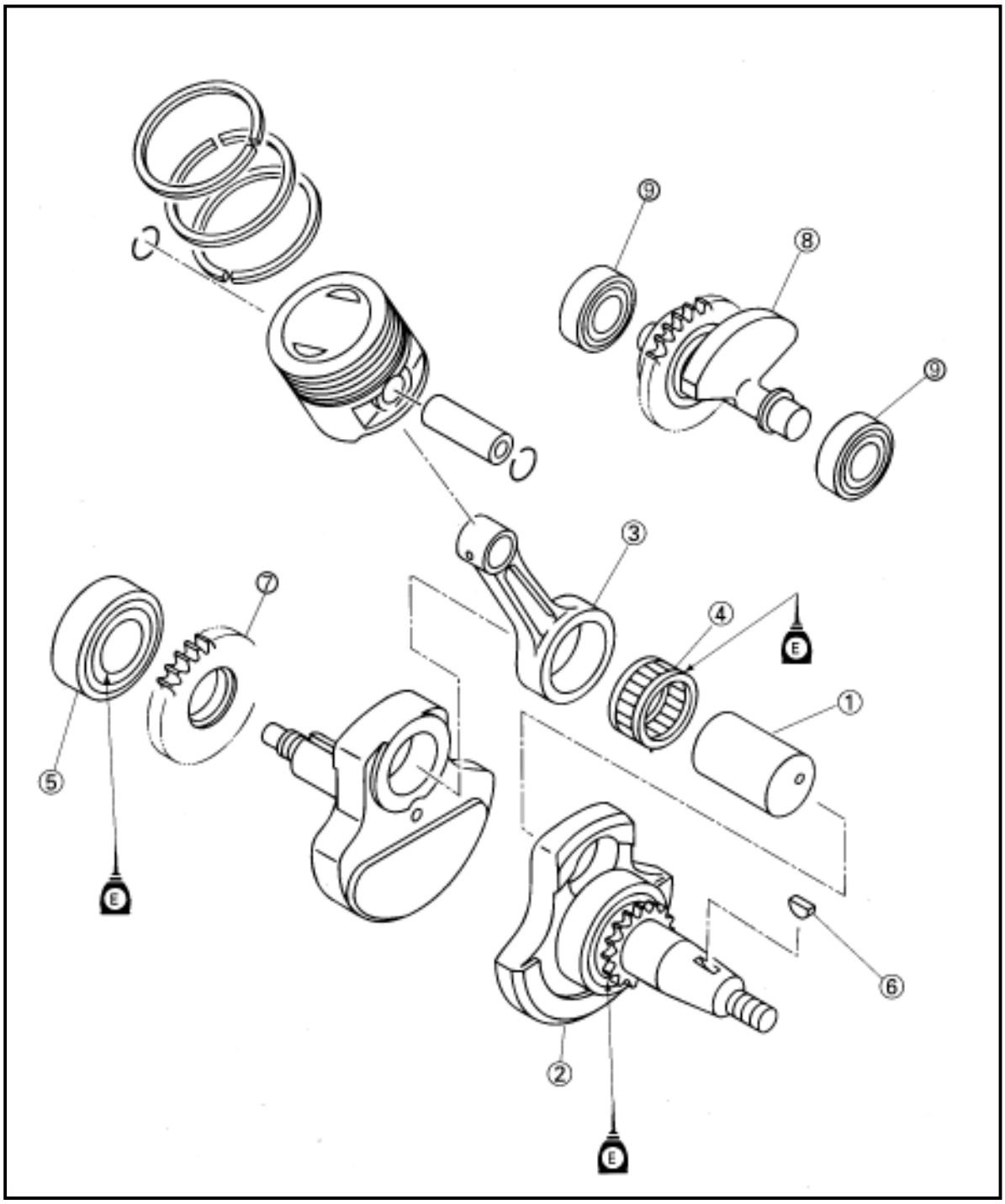


4. Install :
   • Plate ①
   • Bolt ②

	Bolt (Plate) : 7 Nm (0.7 m.kg, 5.1 ft.lb)

CRANKSHAFT

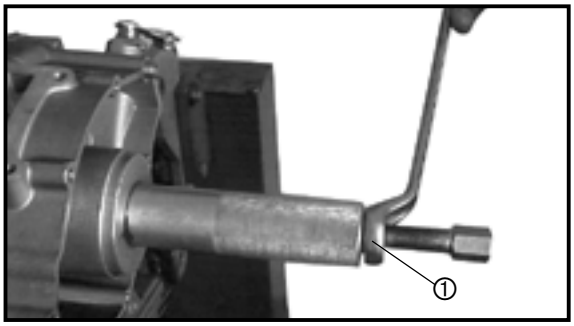
① Crank Pin
② Crank Shaft
③ Connecting Rod
④ Big end Bearing
⑤ Crankshaft Bearing
⑥ Wood-ruff Key
⑦ Gear Balancer
⑧ Balancer Assy.
⑨ Bearing



CRANKSHAFT

1. Insert :
   • CrankShaft in the Crankcase (L.H.)
2. Attach :
   • Crankshaft Installing Tool on Crankshaft

Crankshaft Installing Tool
YSST - 266
Spacer
YSST - 267



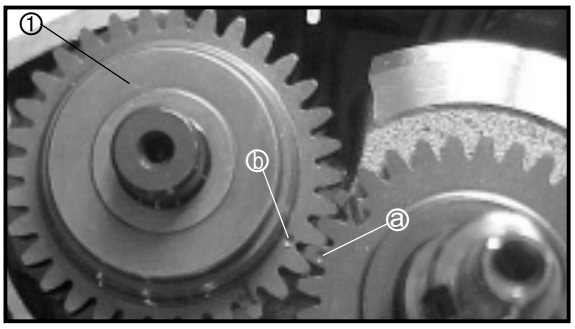
3. Install :
   • Crankshaft by tightening the Nut ①

NOTE :

Hold the Connecting Rod at Top End with one hand while turning the Nut of the Installing Tool with the other. Operate the Installing Tool until the Crankshaft is seated against the Bearing.

CAUTION:

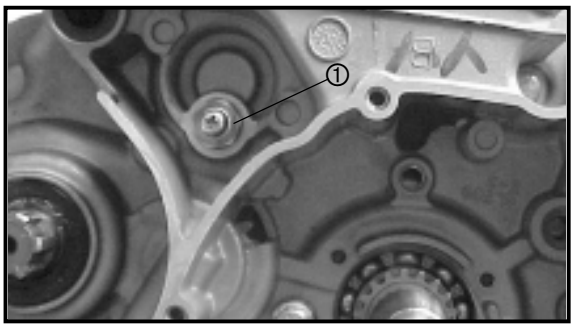
To avoid scratching the Crankshaft and to ease the Installation procedure, apply Engine Oil onto each Bearing and crankcase LH.



4. Install :
   • Balancer shaft ①

NOTE :

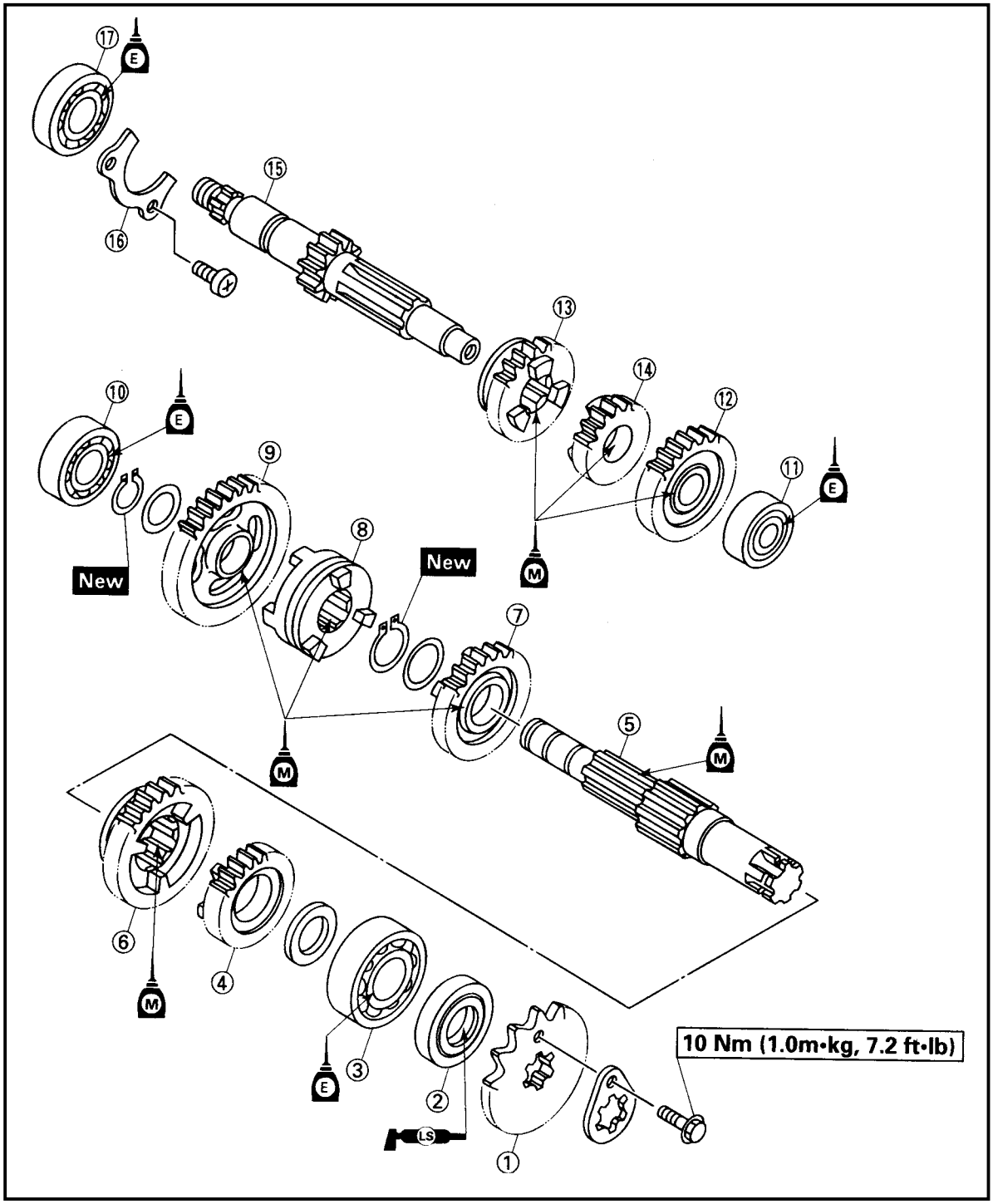
When installing the balancer shaft, align the punched mark ⓐ on the crankshaft drive gear with the punched mark ⓑ on the balancer gear.



5. Install :
   • Neutral Switch ①

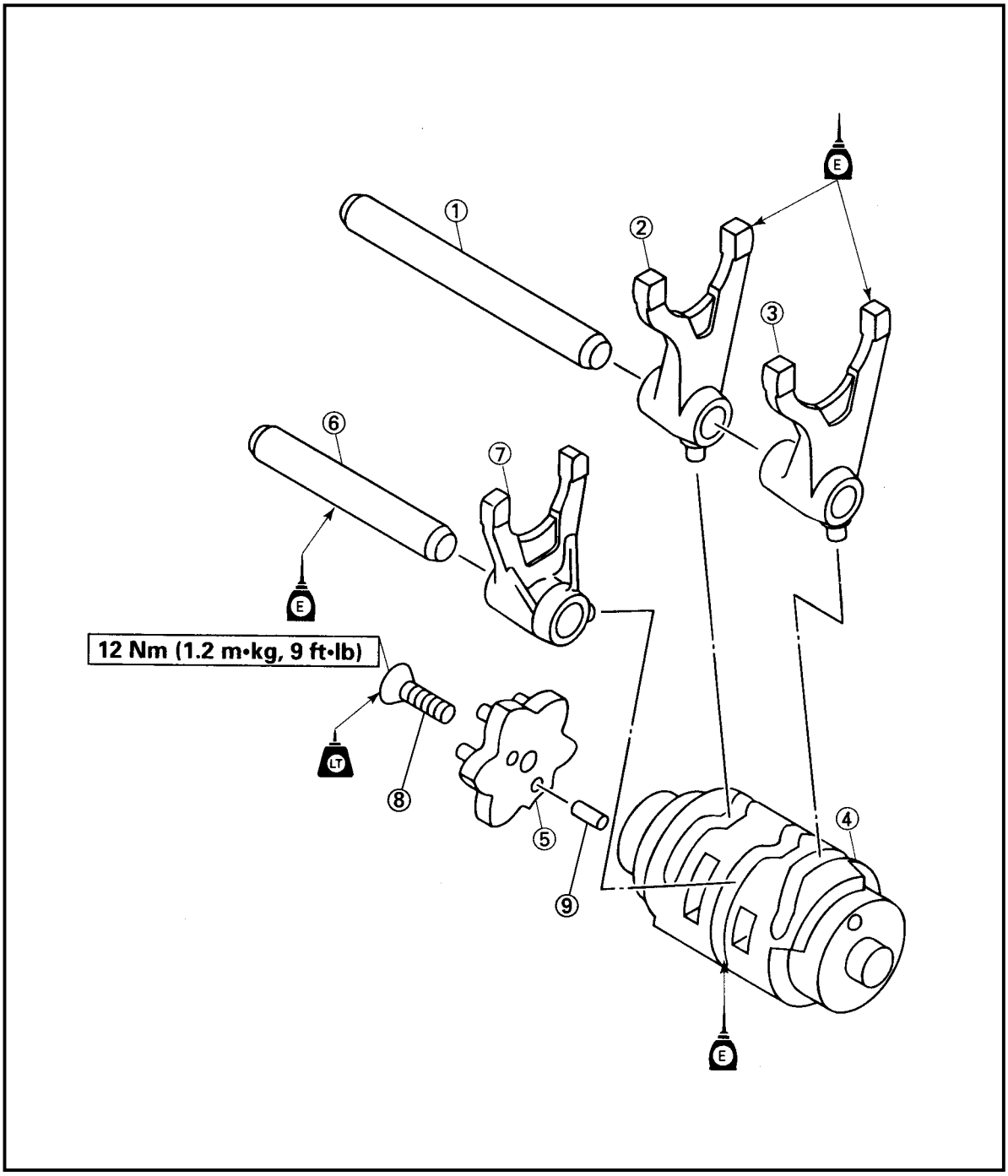
TRANSMISSION

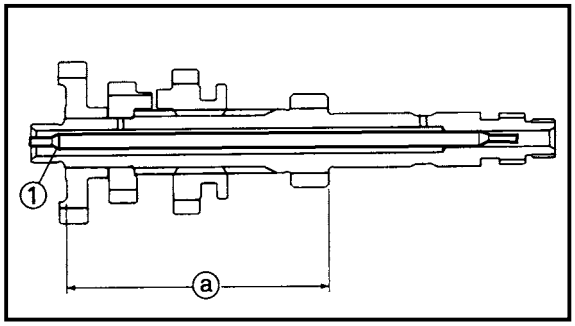
① Drive Sprocket
② Oil Seal
③ Bearing
④ 4th Wheel Gear
⑤ Drive Axle
⑥ 2nd Wheel gear
⑦ 3rd Wheel Gear
⑧ Clutch Dog
⑨ 1st Wheel Gear
⑩ Bearing
⑪ Bearing
⑫ 4th Pinion Gear
⑬ 3rd Pinion Gear
⑭ 2nd Pinion Gear
⑮ Main axle
⑯ Plate
⑰ Bearing



SHIFTER

① Shift Fork Guide Bar (long)
② Shift Fork # R
③ Shift Fork # L
④ Shift Cam
⑤ Segment
⑥ Shift Fork Guide Bar (short)
⑦ Shift fork # C
⑧ Torx Screw
⑨ Pin Shaft Cam



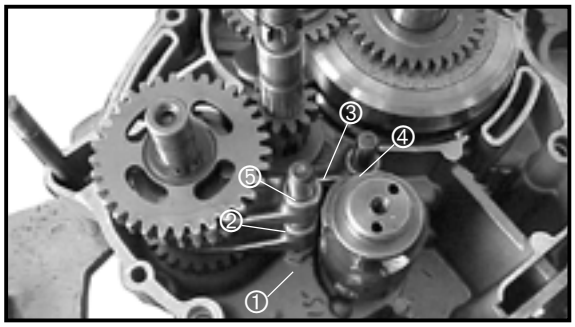


TRANSMISSION, SHIFT CAM AND SHIFT FORK INSTALLATION

1. Measure :
   • Axle Main Assembled length ⓐ

Assembled length (Axle Main):
82.25 ~ 83.45 mm

2. Install :
   • Push rod # 2 ① in the Axle Main.



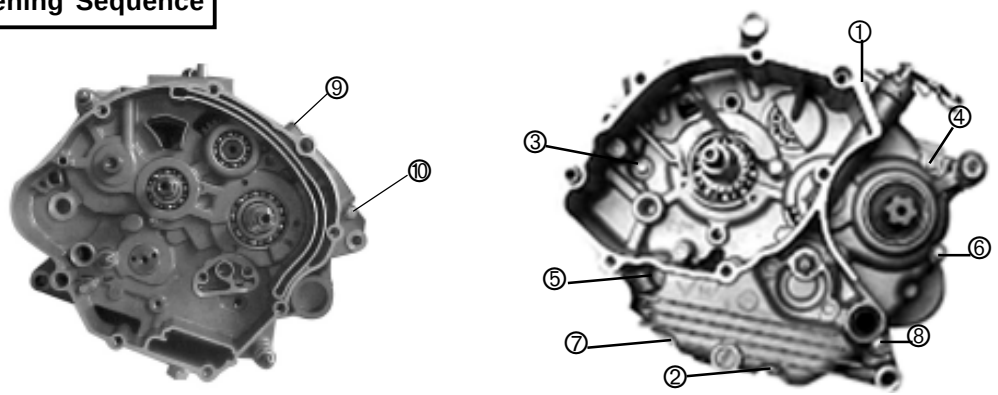
3. Install :
   The following parts in Crankcase LH in following sequence.
   • Shift Fork "L" (left) ①
   (face the "L" side for the Clutch side.)
   • Shift Fork "R" (right) ②
   (face the "R" side for the Clutch side)
   • Shift Fork "C" (center) ③
   (face the "C" side for the Clutch side)
   • Shift Fork Guide Bar #1 ④ (Short)
   • Shift Fork Guide Bar #2 ⑤ (Long)

NOTE :
Install the Shift Forks with the embossed mark facing upward.

4. Check :
   • Shift Cam operation
   Improper operation ➔ Reassemble/Repair

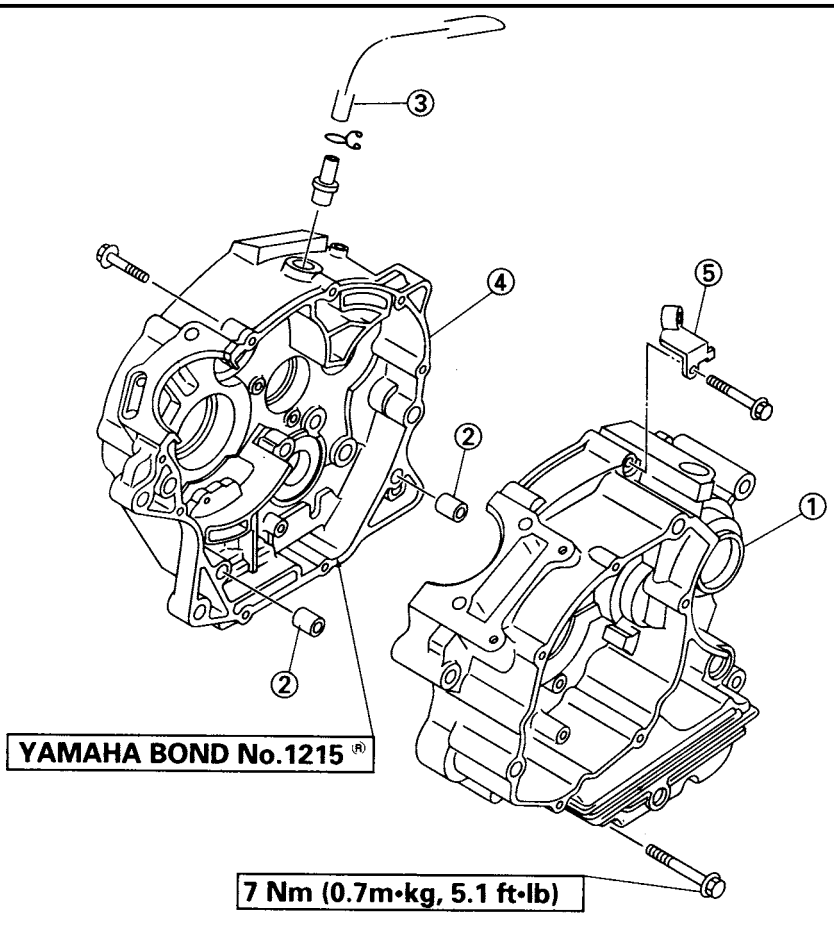
NOTE :
Check the transmission and Shift Forks for smooth operation by turning the Shift cam with your hand.

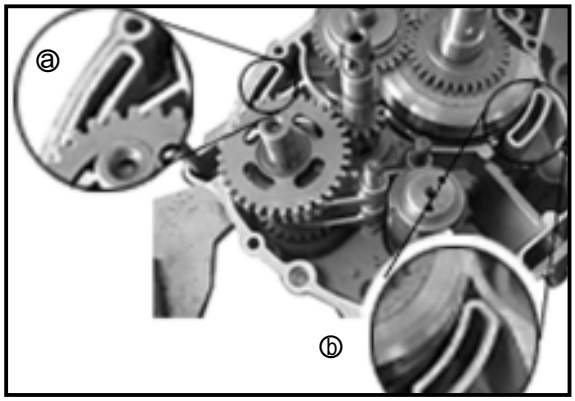
Tightening Sequence

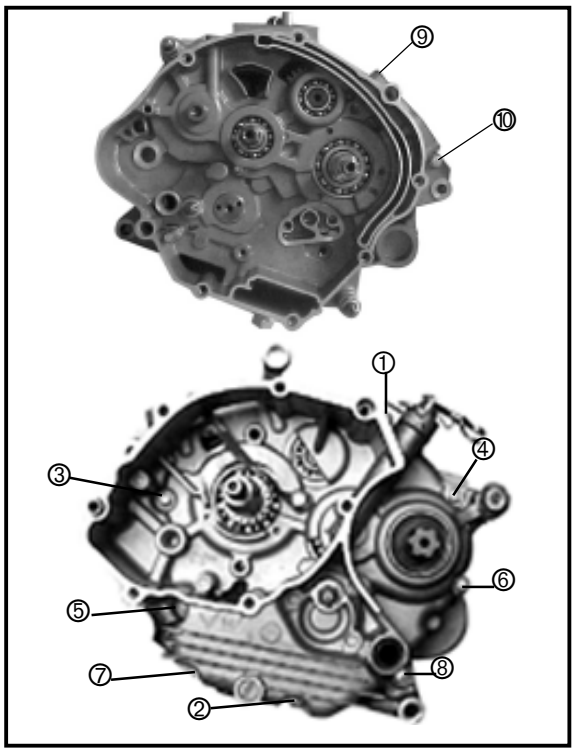


CRANKCASE

① Crankcase #1 (LH)
② Dowel Pins
③ Crankcase Breather Hose
④ Crankcase #2 (RH)
⑤ Holder Clutch Cable







CRANKCASE LH

1. Apply :
   • Sealant on the Crankcase Mating surfaces

Sealant
Yamaha bond No. 1215:

2. Install :
   • Dowel Pins ①

NOTE :
Do not allow any sealant to come in contact with the Oil Galleries ⓐ and ⓑ as shown in the figure.

3. Install:
   • Crankcase RH with the Crankcase LH. Tap lightly on the Case with mallet.

NOTE :
Tighten the Engine Mounting Nuts-2 nos for holding the Engine on the engine stand.

4. Tighten :
   • Bolts 2 nos Crankcase RH
   • Bolts 8 nos Crankcase LH as per sequence

	Bolts (Crankcase) : **10 Nm (1.0 m.kg, 7.2 ft.lb)**

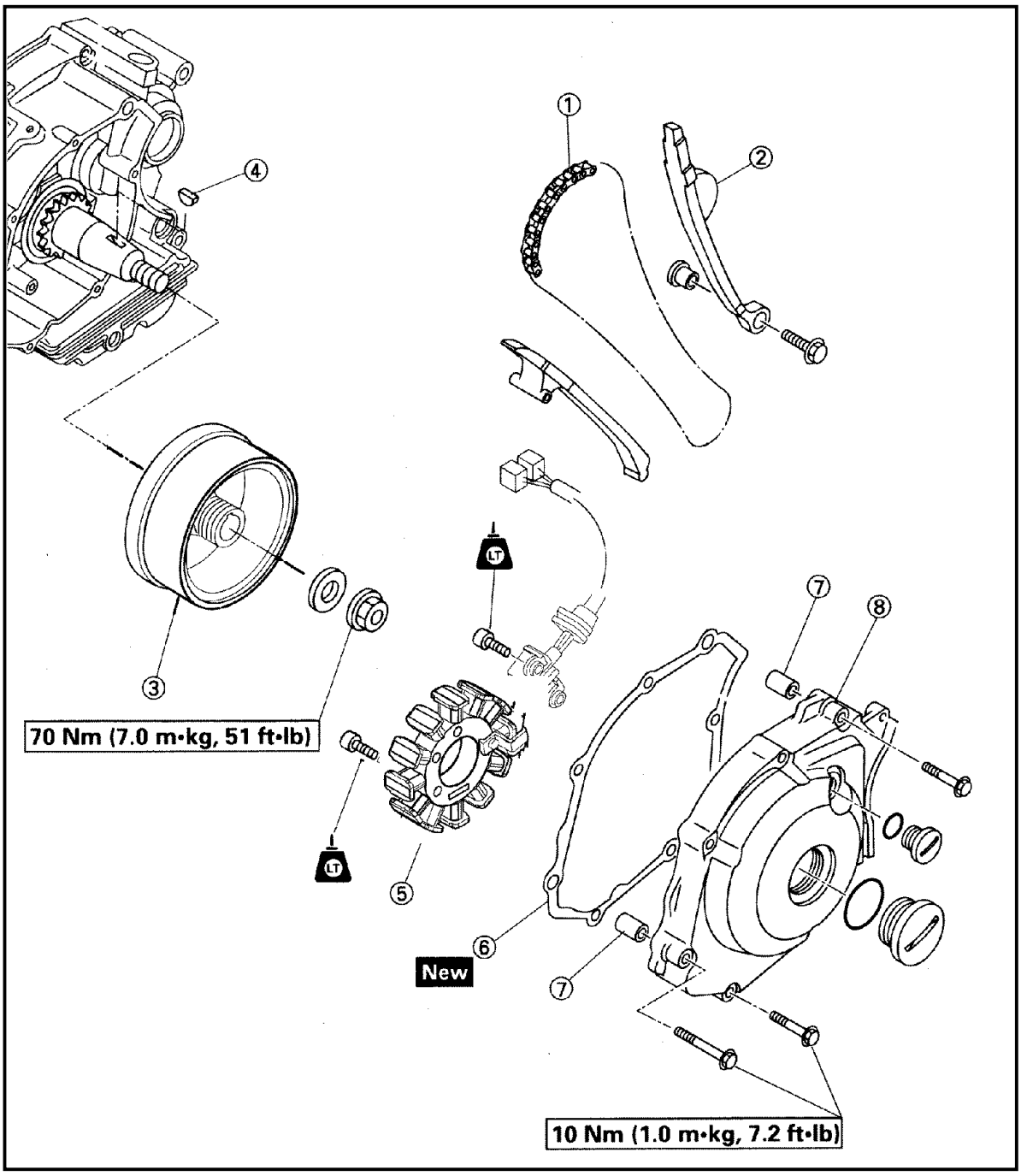
5. Apply :
   • 4-Stroke Engine Oil on the Crank Pin, Bearings and Oil Delivery Hole

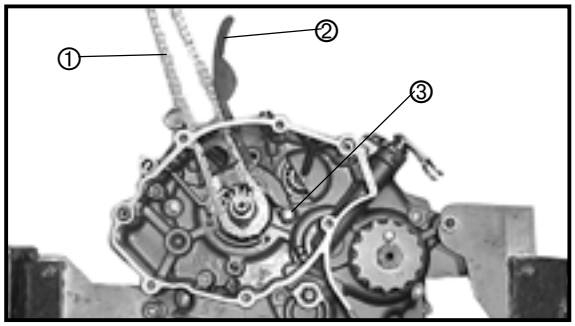
6. Check :
   • Crankshaft and transmission operation for smooth rotation/ shifting by hand

Unsmooth operation ➔ Reassemble/Repair

CDI MAGNETO

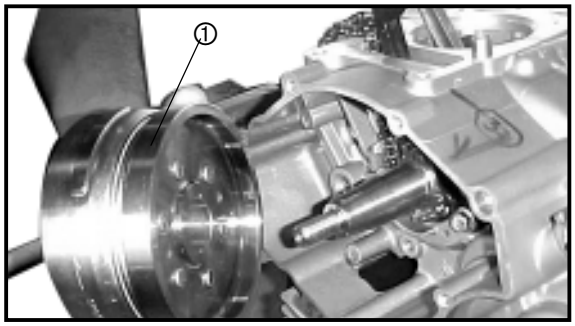
① Timing Chain
② Guide Stopper # 1 and # 2
③ CDI Rotor Assy
④ Wood-Ruff Key
⑤ Stator Assy.
⑥ Gasket
⑦ Dowel Pin
⑧ Cover Crankcase #1





TIMING CHAIN AND GUIDE STOPPER#2

1. Install
   • Timing Chain ①
2. Install
   • Guide stopper#2 ② with spacer
   • Tighten the bolt ③

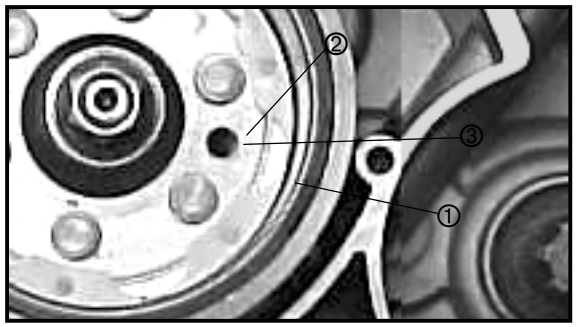


C.D.I. MAGNETO INSTALLATION

1. Install :
   • Woodruff Key
2. Install :
   • C.D.I. Magneto ①
   • Washer ②
   • Nut ③

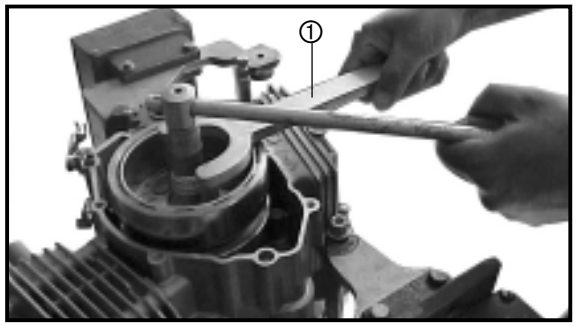
NOTE :

When installing the Magneto Rotor, make sure that the Woodruff Key is properly seated in the Keyway of the Crankshaft.



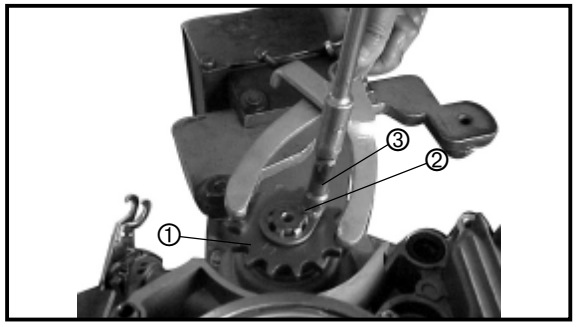
3. Tighten :
   • Nut (CDI Magneto) using the Magneto Holder ① - YSST-627

	Nut (CDI Magneto): **70 Nm (7.0 m.kg, 51 ft.lb)**



SPROCKET DRIVE

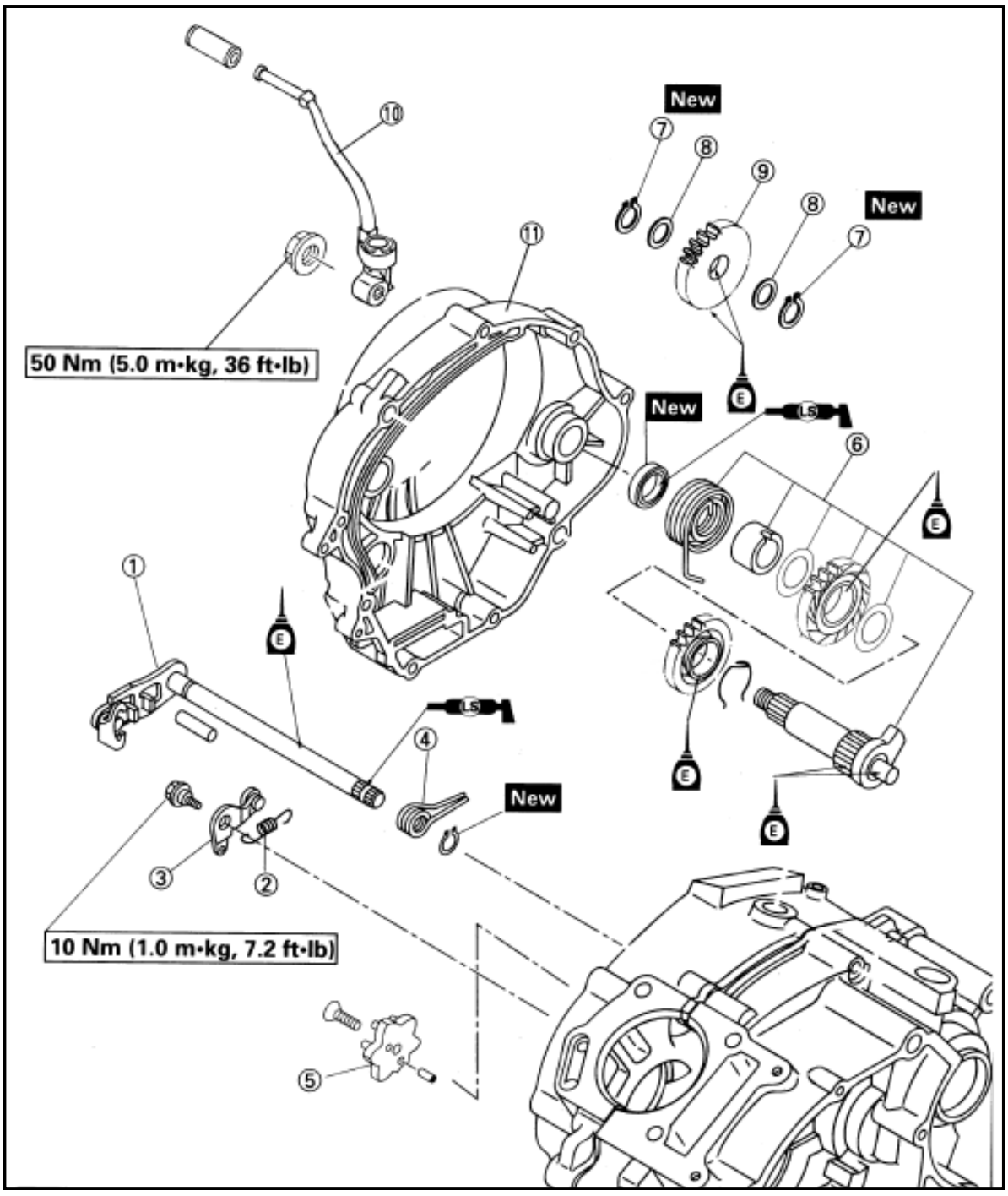
1. Install
   • Sprocket Drive ①
   • Drive Sprocket Washer ②
2. Tighten
   • Bolt ③ (Drive Sprocket) using the sprocket Holder.

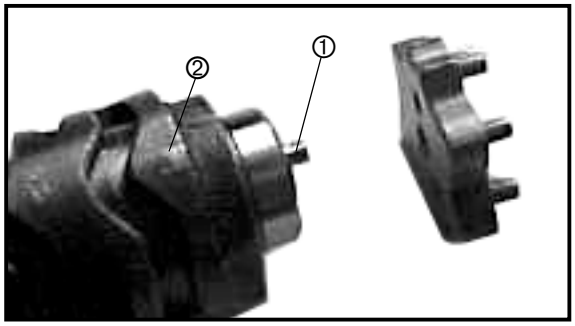


	Drive sprocket Holder **YSST-605**
	Bolt Sprocket Drive **10 Nm (1.0 m.kg, 7.2 ft.lb)**

SHIFT SHAFT AND KICK STARTER

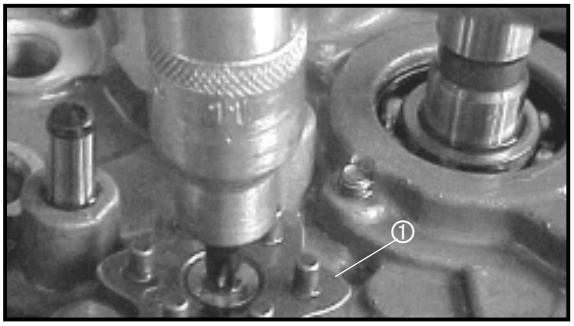
① Shift Shaft
② Torsion Spring
③ Stopper Lever
④ Return Spring
⑤ Segment
⑥ Kick Starter Assembly
⑦ Circlip
⑧ Washer
⑨ Kick Idle Gear
⑩ Kick Shaft Assy.
⑪ Cover Crankcase # 2





SEGMENT AND SHIFT SHAFT

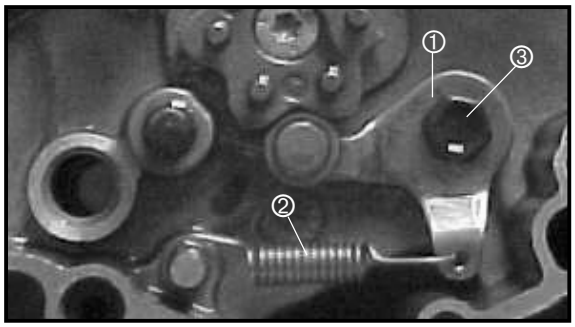
1. Install
   • Dowel Pins ① on the Cam Shifter ②



2. Install :
   • Segment ① using Torx Bit Tool

	Torx Bit Tool **YSST - 611**

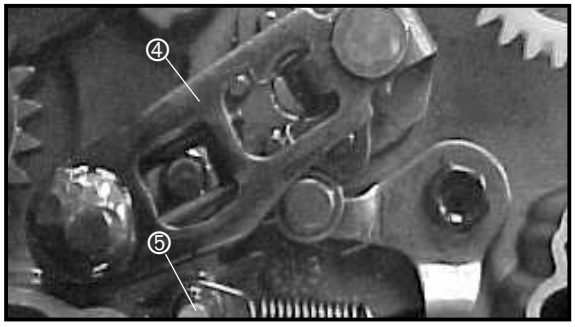
NOTE :
Fit the Dowel Pins on the Cam Shifter to the locating hole on the Cam Shifter and install the Segment ①



3. Install :
   • Stopper Lever ①
   • Spring ②
4. Tighten
   • Bolt stopper lever ③

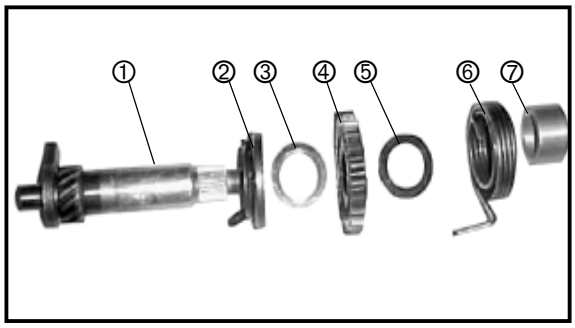
	Bolt (Stopper Lever) : **10 Nm (1.0 m.kg, 7.2 ft.lb)**

NOTE :
Hook the Spring ends on the Stopper Lever ① and the Crankcase Pin
Mesh the Stopper Lever ① with the Cam Shifter Stopper.



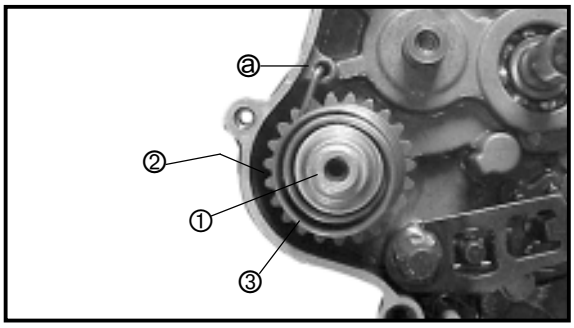
5. Install :
   • Shift Shaft Assembly ④

NOTE :
Apply Oil to the Stopper Pin and hook the Spring ends on the Stopper pin ⑤



KICK STARTER INSTALLATION

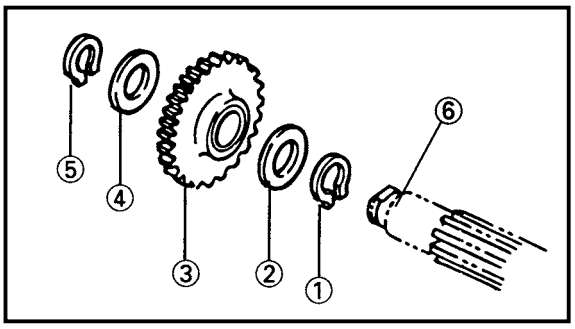
1. Install :
   - Kick axle ①
   - Ratchet gear with return spring ②
   - Shim ③
   - Ratchet gear ④
   - Shim ⑤
   - Torsion spring ⑥
   - Spacer ⑦



2. Install :
   - Kick Axle Assembly ①
   - Kick Gear Clip ②
   - Torsion Spring ③

NOTE :

Turn the Torsion Spring clockwise and hook into the proper hole ⓐ in the Crankcase.



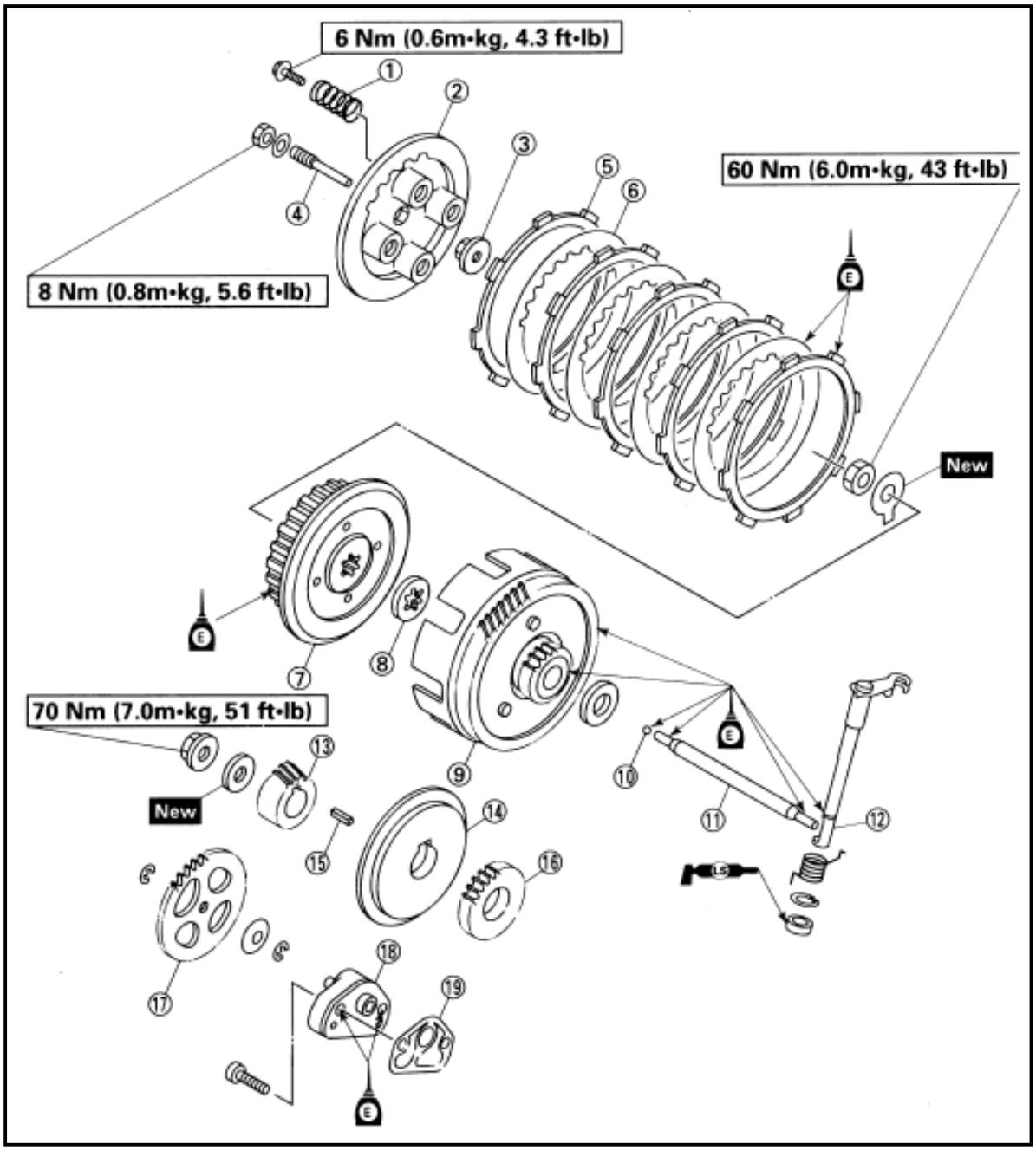
2. Install :
   Following parts on the Axle Drive ⑥
   - Circlip ①
   - Washer ②
   - Kick Idle gear ③
   - Washer ④
   - Circlip ⑤

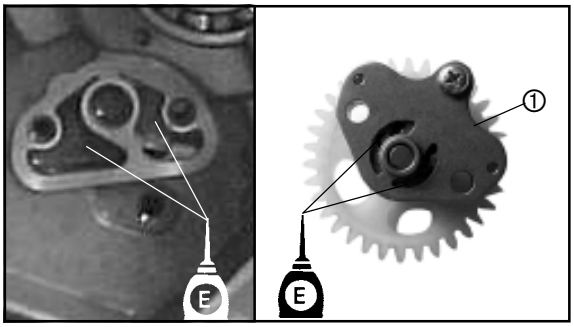
NOTE :

Install Circlips radius side towards the component refer Chapter 1, Page no 1-3

CLUTCH, PRIMARY DRIVE GEAR AND OIL PUMP

① Clutch Spring
② Pressure Plate
③ Push Plate
④ Push Rod #1
⑤ Friction Plate
⑥ Clutch Plate
⑦ Clutch Boss
⑧ Thrust Washer
⑨ Primary Driven Gear
⑩ Ball
⑪ Push Rod # 2
⑫ Push lever Axle
⑬ Primary Drive Gear
⑭ Rotary Filter
⑮ Key
⑯ Oil Pump Drive Gear
⑰ Oil Pump Driven Gear
⑱ Oil Pump
⑲ Gasket

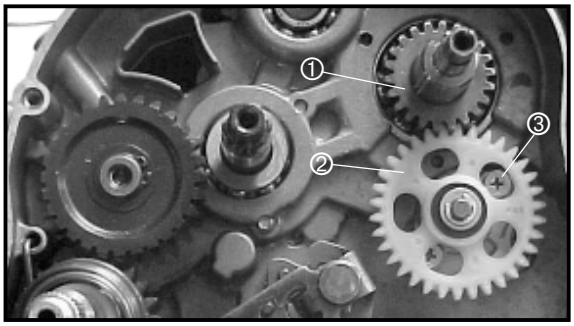




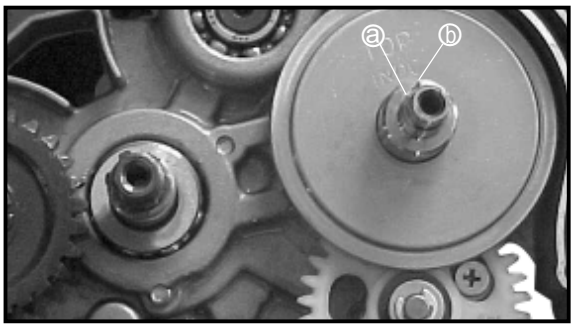
OIL PUMP INSTALLATION

1. Lubricate :
   - Oil delivery passage (Crankcase RH)
   - Oil Pump Assembly ①

Recommended Lubricant:
4- Stroke Engine Oil



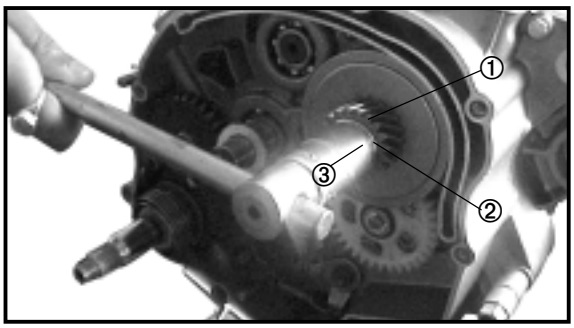
2. Install :
   - Drive gear (Oil Pump) ①
   - Gasket
   - Oil Pump Assy ②
3. Tighten
   - Screw (2 nos) ③



4. Install
   - Rotary Filter

NOTE :

Align the Rotary Filter Dog ⓐ with groove of the Crankshaft ⓑ and make sure to keep 'TOP' marking facing upside.



PRIMARY DRIVE GEAR INSTALLATION

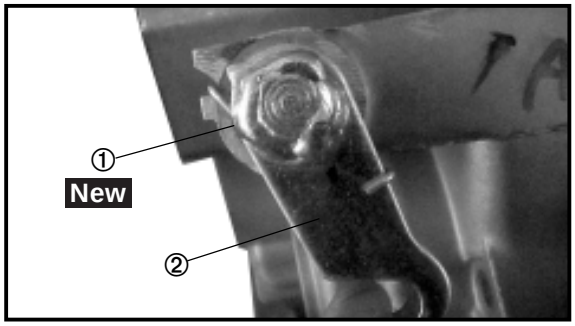
1. Install :
   - Primary Drive Gear ①
   - Key
   - Washer ②
2. Tighten :
   - Nut ③

Nut (Primary Drive Gear)
70 Nm (7.0 m.kg, 51 ft.lb)

NOTE :

Hold the Rotor with Magneto Holder then tighten the Primary Drive Gear Nut.

Magneto Holder
YSST - 627

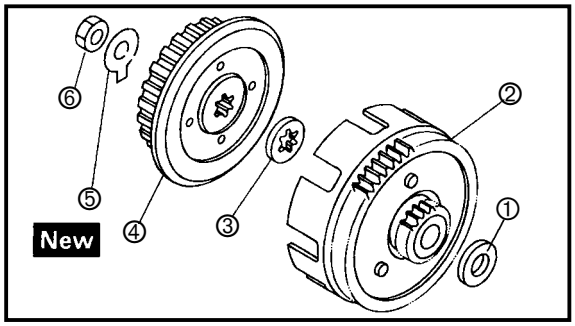


CLUTCH INSTALLATION

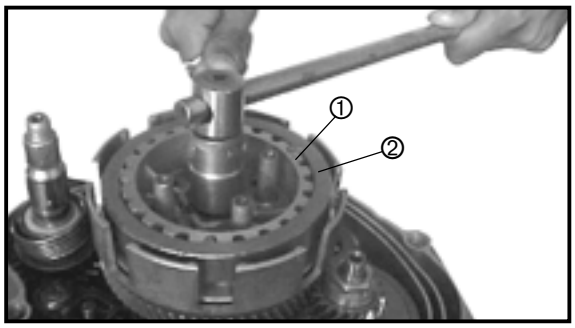
1. Install :
   - Oil Seal ① **New**
   - Circlip **New**
   - Push Lever Axle ②

NOTE :

Install longer side ⓐ of the Spring on Push Lever and smaller side ⓑ on the Crankcase Notch.

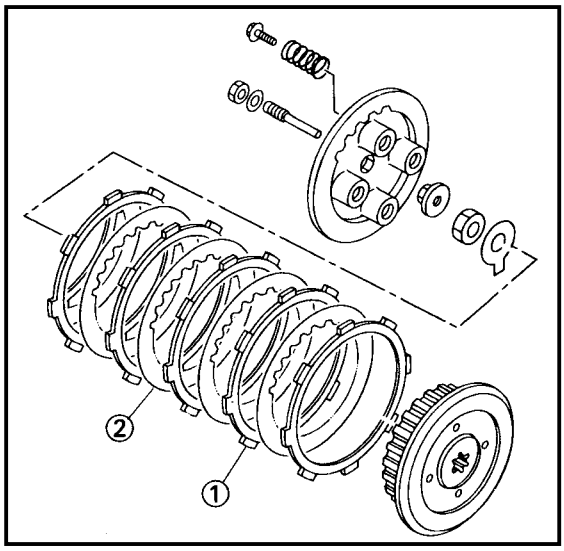


2. Install :
   - Spacer ①
   - Primary Driven Gear ②
   - Thrust Washer ③
   - Clutch Boss ④
   - Lock Washer ⑤ **New**
   - Clutch Boss Nut ⑥



3. Tighten :
   - Nut Clutch Boss ① while holding the Clutch Boss with Clutch Hub Holder ②

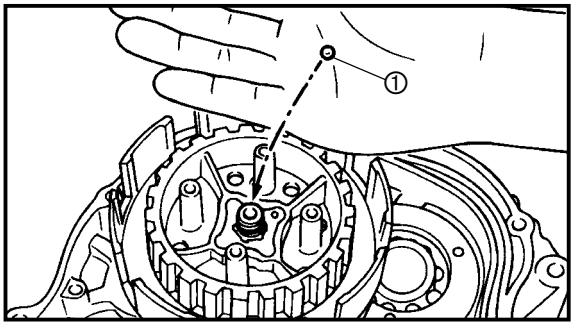
	Clutch Hub Holder **YSST - 233**
	Nut (Clutch Boss): **60 Nm (6.0 m. kg, 43.5 ft. lb)**



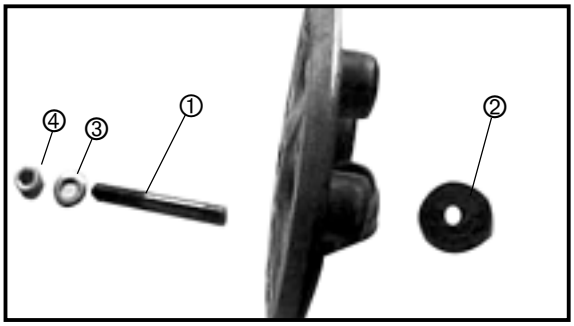
4. Bend :
   - Lock Washer tab
   (along a flat side of the end)
5. Install :
   - Friction Plate ① 5 Nos
   - Clutch Plate ② 4 nos

NOTE :

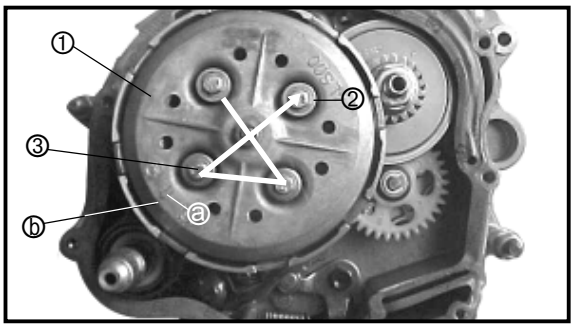
- Install the Clutch Plates and Friction Plates alternately on the Clutch Boss, starting with a Friction Plate and ending with a Friction Plate.
- Lubricate all Clutch and Friction Plates with Engine Oil before installation
- Be sure to install a Clutch Plate with “Projection Mark” offset approximately 90 º from previous plates projection continue this procedure in clockwise direction until all Clutch Plates are installed



6. Install :
   • Ball ①



7. Install :
   • Push Rod # 1 ①
   • Push Plate ②
   • Plate Washer ③
   • Nut ④ (Push Rod # 1)

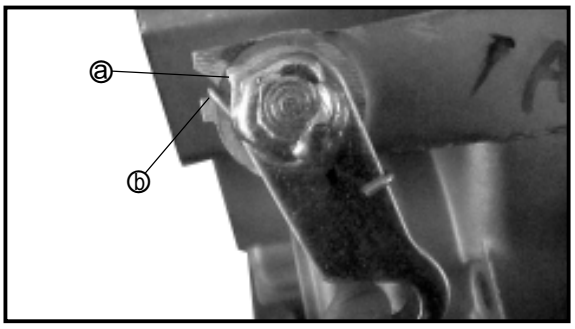


8. Install :
   • Pressure Plate ①
   • Compression Springs ②
   • Bolts ③ (Clutch Spring)

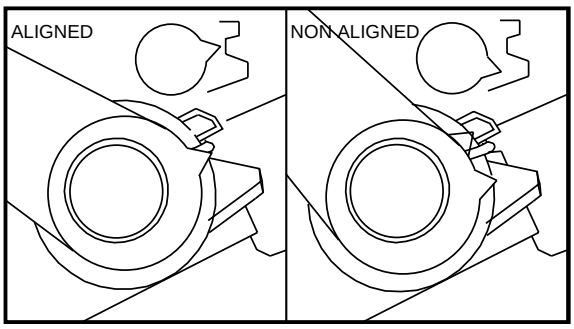
	Bolts (Clutch Spring) : **6 Nm (0.6 m.kg, 4.3 ft. lb)**

NOTE :

Match arrow mark ⓐ on the Pressure Plate with the Punch mark on Clutch Boss ⓑ while installing the Pressure Plate.
Tighten the Clutch Spring Bolts in stage, using a crisscross pattern.



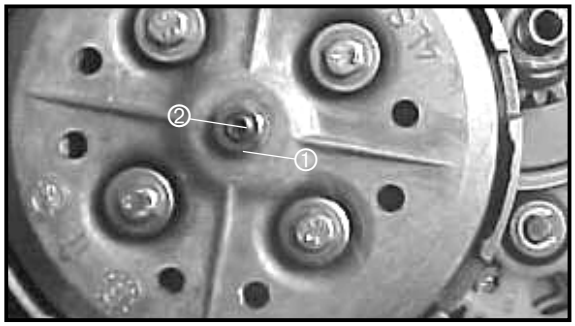
9. Check :
   • Push Lever position
   • Push the Push Lever Assembly in the arrow direction and make sure that the mach mark are aligned adjust;
   ⓐ Match mark on the Push Lever Assembly
   ⓑ Match mark on the Crankcase



10. Adjust :
   • Push Lever position

****

Adjustment steps :
• Loosen the Lock Nut ①
•Turn the Adjuster ② clockwise or anticlockwise to match alignment marks.



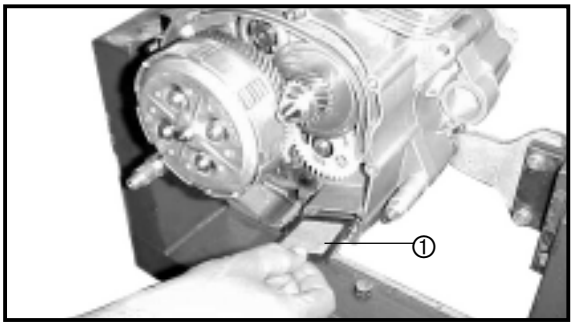
• Hold the Adjuster to prevent it from moving and tighten the Locknut to specification

CAUTION:

Take care not to overtighten the Adjuster ② and remove the freeplay between both Push Rods.

• Tighten the Locknut ①

****

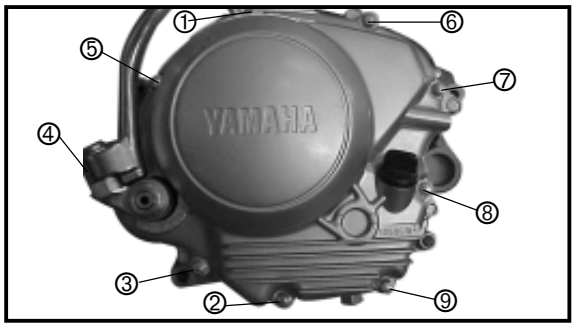


11. Install
    • Strainer ①

NOTE :

Always keep its wider side, outside of Crankcase

12. Install :
    • Dowel Pins
    • Gasket (Crankcase #2) **New**
    • Crankcase Cover #2 (RH)

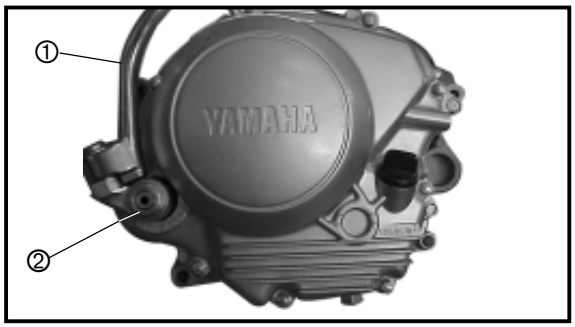


	Bolts (Crankcase Cover): **10 Nm (1.0 m.kg, 7.2 ft.lb)**

NOTE :

Tighten the Bolts in decreasing numerical order (see number on the illustration)

13. Install :
    • Kick Crank ①
    • Nut Kick Crank ②

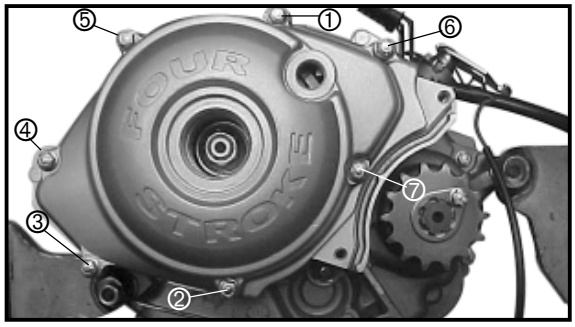


	Nut (Kick Arm): **50 Nm (5.0 m.kg, 36 ft. lb)**

14. Install :
    • Dowel Pins
    • Gasket (Crankcase Cover #1) **New**
    • Crankcase Cover #1(L.H.)

NOTE:

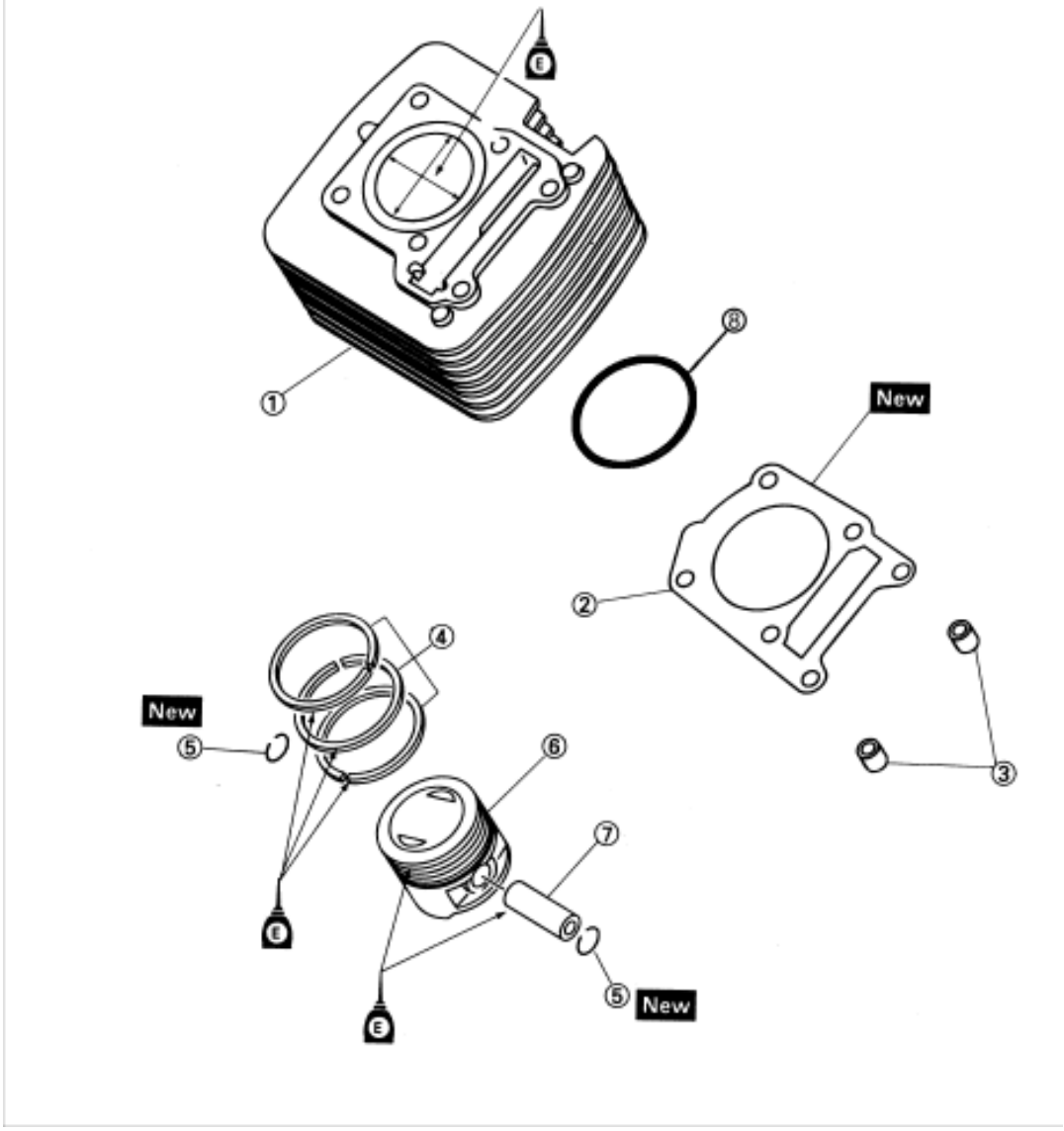
Tighten the Bolts in decreasing numerical order.



	Bolts (Crankcase Cover): **10 Nm (1.0 m.kg, 7.2 ft.lb)**

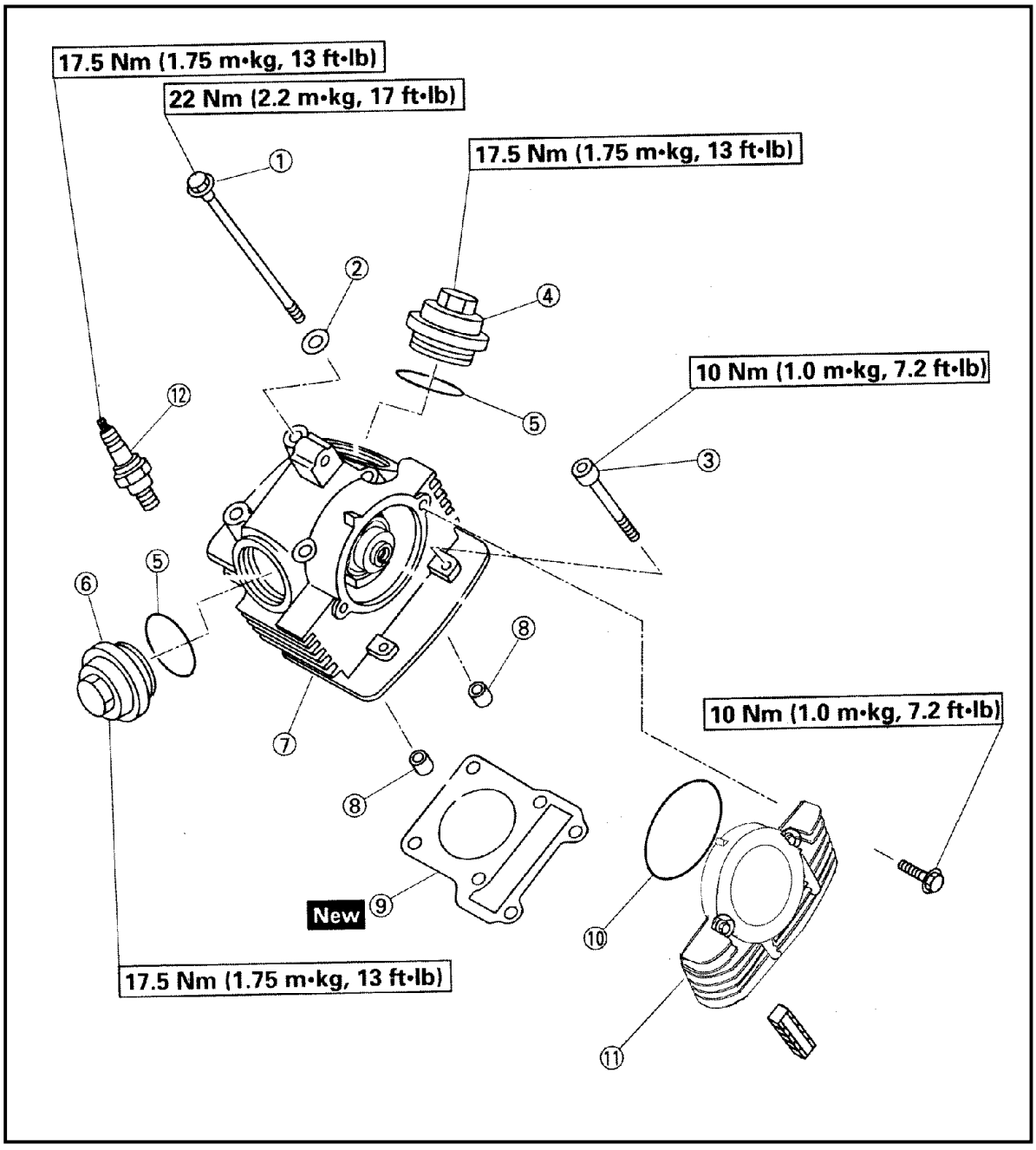
CYLINDER AND PISTON

① Cylinder
② Gasket Cylinder
③ Dowel Pins
④ Piston Rings
⑤ Piston Pin Circlips
⑥ Piston
⑦ Pin Piston
⑧ O' Ring



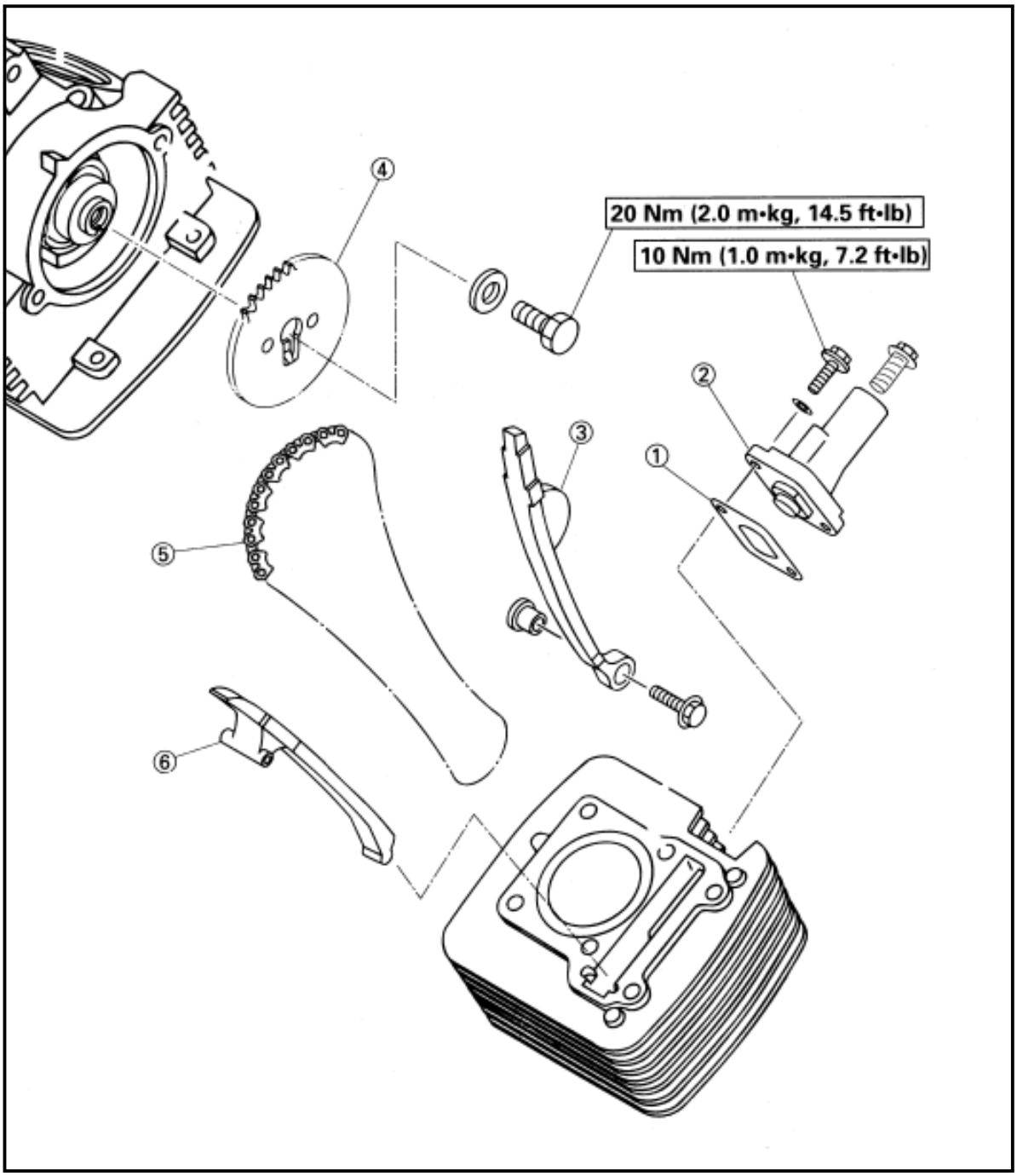
CYLINDER HEAD

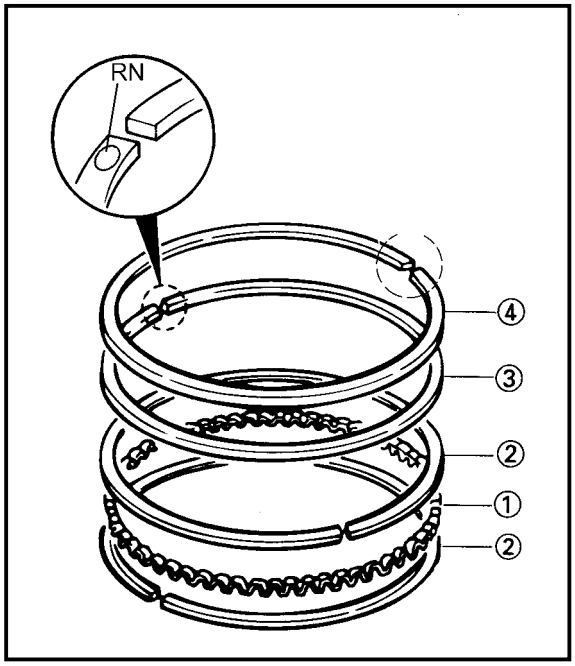
① Bolt Flange
② Washer
③ Bolt
④ Valve Cover (intake)
⑤ O-Ring
⑥ Valve Cover (exhaust)
⑦ Cylinder Head
⑧ Dowel Pin
⑨ Gasket Cylinder Head
⑩ O-Ring
⑪ Cover Cylinder Head Side # 3
⑫ Spark Plug



CAM SPROCKET AND TIMING CHAIN

① Gasket
② Timing Chain Tensioner Assembly
③ Guide Stopper # 2
④ Cam Sprocket
⑤ Timing Chain
⑥ Guide Stopper # 1





PISTON RING, PISTON AND CYLINDER INSTALLATION

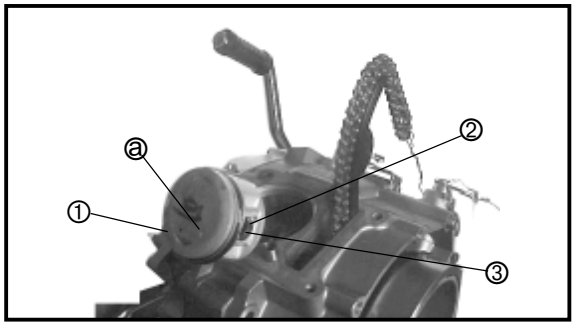
1. Install in following sequence
   - Expander Spacer (Oil Ring) ①
   - Side Rails (Oil Ring) ②
   - 2nd Ring ③
   - Top Ring ④

NOTE :
- Make sure to install the Piston Rings so that the RN mark is located on the upper side of the 2nd Ring.
- Lubricate the Piston and Piston Rings with Engine Oil.

2. Install :
   - Piston ①
   - Piston Pin ② using Piston Pin Replacer Tool

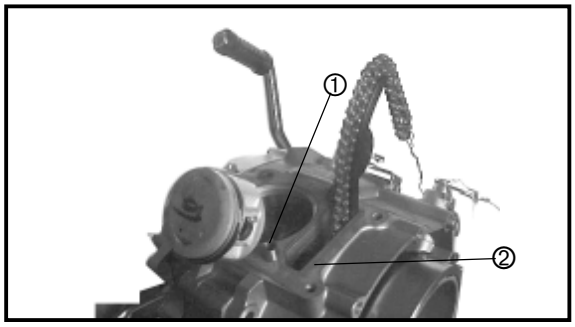
	Piston Pin replacer tool **YSST - 607**

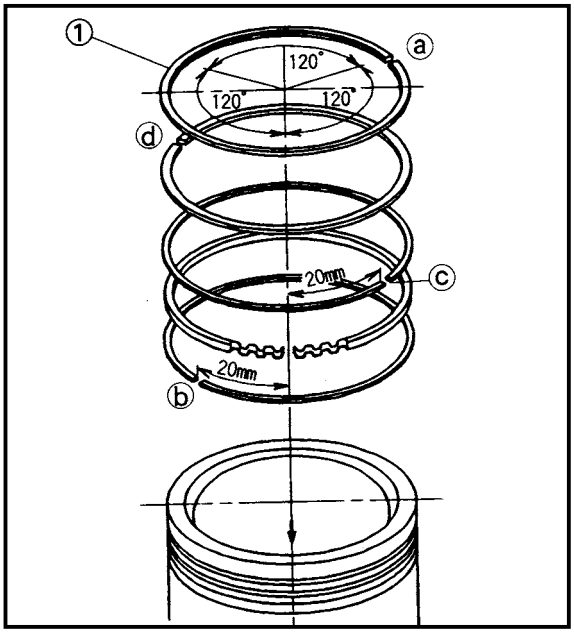
   - Piston Pin Circlip ③ **New**



NOTE :
- Apply Engine Oil on the Piston Pin
- The "➔"mark ⓐ on the Piston must be kept towards the exhaust side of the Cylinder
- Before installing the Piston Pin Circlip, Cover the Crankcase opening with a clean cloth.

3. Install :
   - Dowel Pins ① - 2 Nos.
   - Gasket (Cylinder) ② **New**





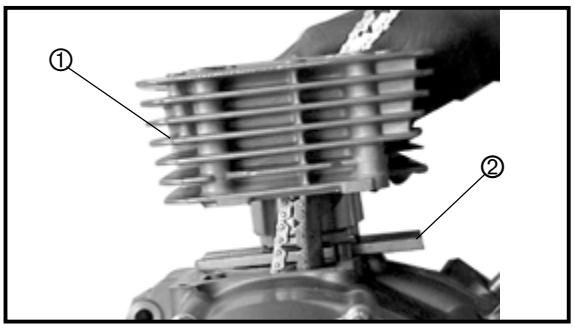
4. Install :
   • Piston Rings ①

NOTE :

Offset the Piston Rings end gaps as shown.

ⓐ Top Ring End
ⓑ Oil Ring end (lower)
ⓒ Oil Ring End (upper)
ⓓ 2nd Ring End

5. Lubricate :
   • Piston outer surface
   • Piston Rings
   • Cylinder Inner Surface

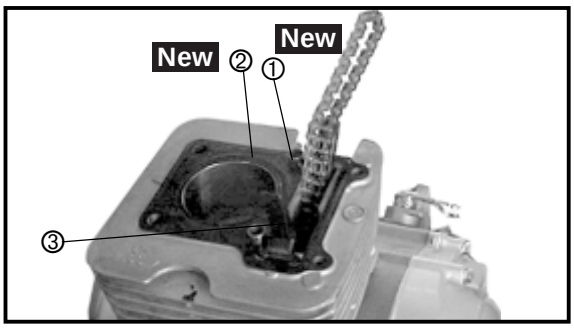


6. Install :
   • Cylinder ①

NOTE :

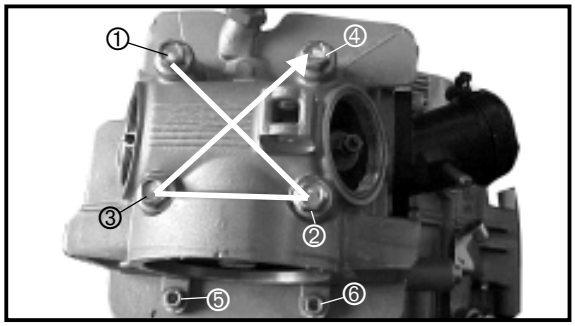
- Install the Cylinder with one hand while compressing the Piston Rings with the other hand
- Pass the Timing Chain and Guide stopper # 2 through the Timing Chain Cavity.
- Press the Piston down to rest on Piston Base ② YSST - 604

	Piston Base **YSST - 604**



Cylinder head Installation

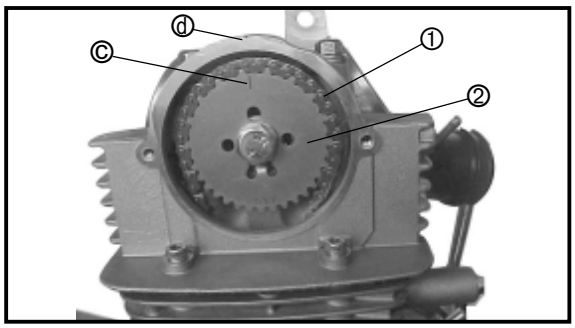
1. Install
   • Dowel Pins ① New
   • Gasket (Cylinder Head) ② New
   • Guide Stopper#1 ③



2. Install :
   - Cylinder Head
   - Bolt with Washer (Cylinder Head)

Bolts (Cylinder Head):
M8 (1-4) :
22 Nm (2.2 m.kg, 17 ft.lb)
M6(5-6) :
10 Nm (1.0 m.kg., 7.2 ft. lb)

NOTE :
- Apply Engine Oil onto the Bolt thread
- Tighten the Bolts starting with the lowest numbered one.



3. Install :
   - Cam Sprocket ②
   - Timing Chain ①

****

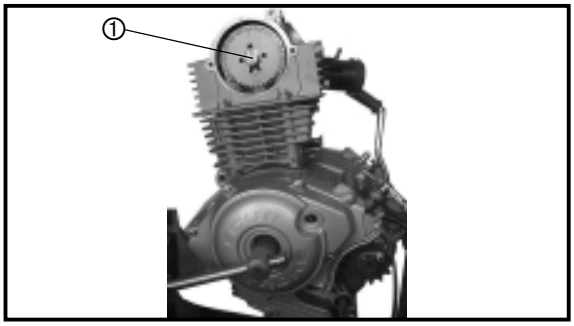
Installing steps :
- Turn the Crank Shaft anticlockwise until the slit ⓐ (3rd Mark) matches the stationary pointer ⓑ
- Align the "I" mark Ⓒ on the Cam Sprocket with the stationary pointer ⓓ on the Cylinder Head.
- Fit the Timing Chain ① on Cam Sprocket ② and install the Cam Sprocket on the Camshaft.

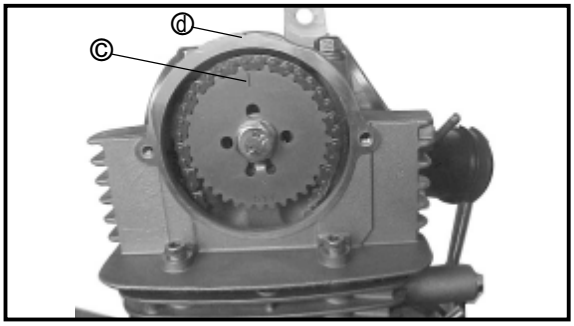
NOTE :
When installing the Cam Sprocket , keep installation of the Camshaft. Damage or improper Valve timing will result.

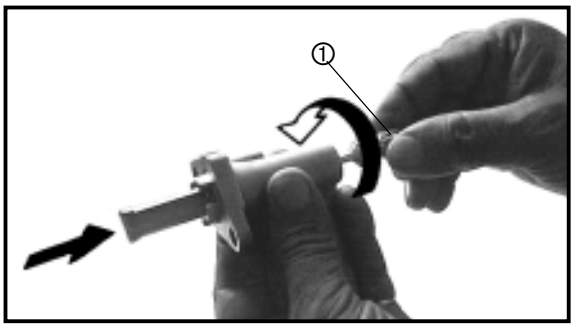
CAUTION:
Do not turn the Crankshaft during installation of the Camshaft. Improper Valve Timing will result.

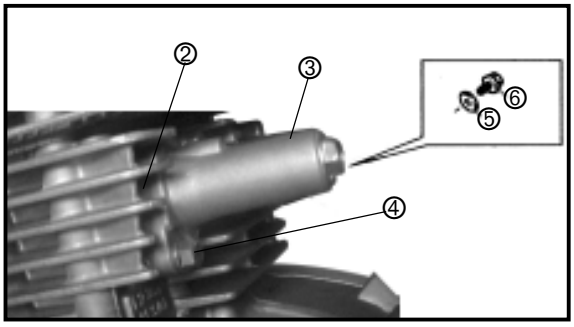
NOTE :
Remove the safety wire from the Timing Chain before installation of Sprocket Cam.

****









4. Install :
   • Plate Washer
5. Tighten
   • Bolt Sprocket ①

	Bolt (Timing Chain Sprocket) : 20 Nm (2. 0 m.kg, 14.5 ft. lb)

NOTE :

Install the Bolt while holding the Magneto Mounting nut with a Wrench.

6. Check :
   • Magneto Rotor Slit ⓐ Third mark in Anticlockwise direction.
   Align with stationary pointer ⓑ in the Crankcase Cover #1 (LH)
   • Cam Sprocket "I" mark ©
   Align with stationary pointer ⓓ on the Cylinder head
   Out of alignment ➔ Adjust

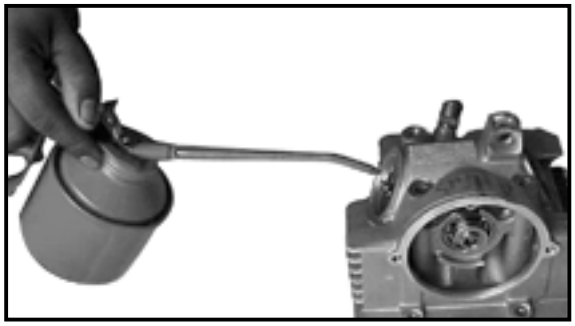
7. Install :
   • Gasket (Timing Chain Tensioner)
   • Timing Chain Tensioner

****

Installation steps :

- Remove the Tensioner Cap Bolt
- While Pressing the Tensioner Rod lightly with fingers, use a Flat Head Screwdriver ① and retract the Tensioner Rod up fully clockwise
- With the Rod fully retracted, install the Gasket ② and the Chain Tensioner ③ and tighten the Bolt ④ with Copper Washer to the specified torque
- Release the Chain Tensioner Rod by Screw-driver, Then install the Gasket ⑤ and the Cap Bolt ⑥ to the specified torque.

	Bolts (Timing Chain Tensioner): 10 Nm (1.0 m.kg, 7.2 ft.lb) **Cap Bolt (Timing Chain Tensioner): 8 Nm (0.8 m.kg, 5.8 ft.lb)**

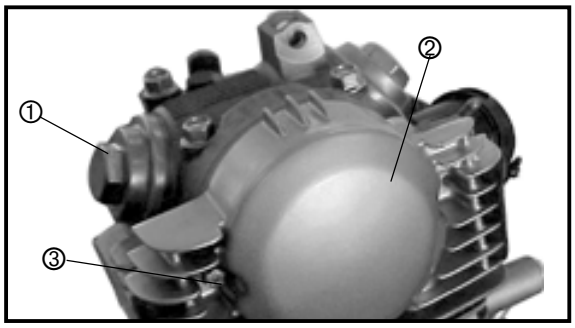


8. Check :
   • Valve clearance specifications

Out of specification ➔ Adjust.
Refer to the “VALVE CLEARANCE ADJUSTMENT” section in Chapter 3, Page no 3-8

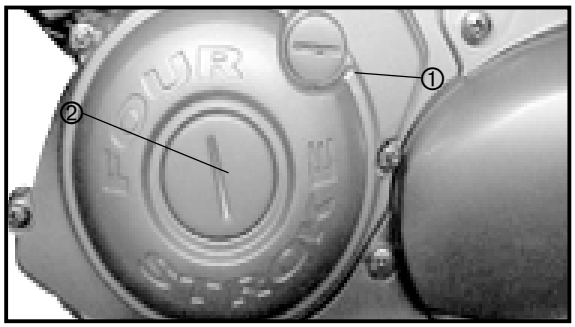
9. Lubricate :
   • 4 Stroke Engine Oil

	Recommended Lubricant : Engine Oil - YAMALUBE

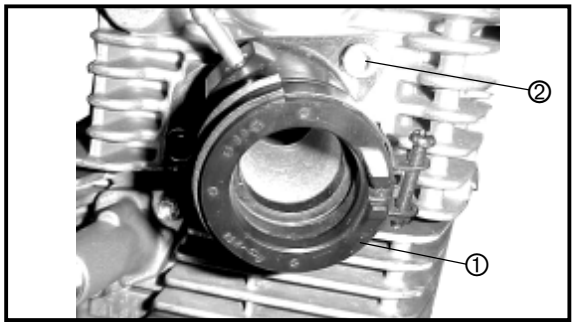


10. Install :
   • Valve Covers (with O-Ring) ①
   • Cylinder Head Side Cover (with O-Ring) ②
   • Bolts ③

	Valve Cover : **17.5 Nm (1.75 m.kg, 13 ft.lb)** **Bolts (Cylinder Head Side Cover)** **10 Nm (1.0 m.kg, 7.2 ft.lb)**



11. Install :
   • Timing Check Plug (with O-Ring) ①
   • Center Plug (with O-Ring) ②



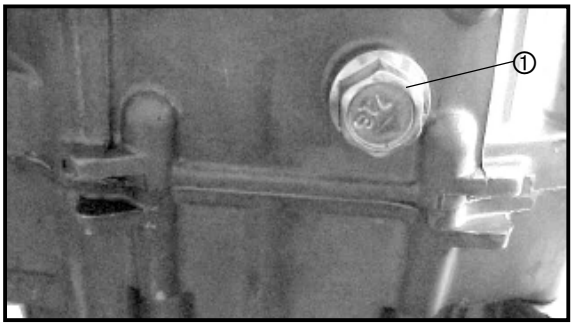
12. Install
   • O-Ring (intake manifold)
   • Intake Manifold ①

13. Tighten
   • Bolts (intake manifold) ② 2 Nos.

	Bolts (intake Manifold) : **10 Nm (1.0 m.kg, 7.2 ft. lb)**

14. Install :
    • Spark Plug

	Spark Plug : **12.5 Nm (1.25 m.kg, 12.6 ft. lb)**

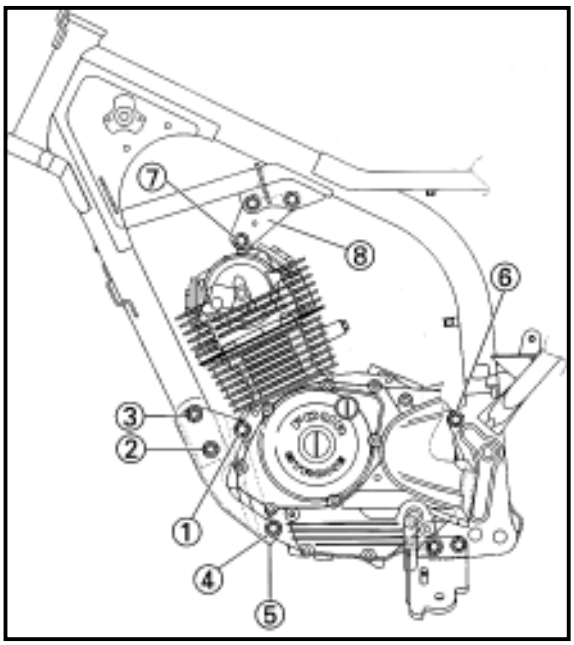


15. Install :
    • Plug Drain ①

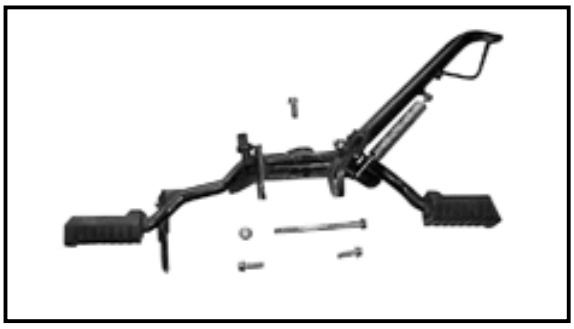
	Plug Drain : **20 Nm (2.0 m.kg, 2.0 ft.lb)**

ENGINE MOUNTING

When remounting the Engine, reverse the removal procedure. Note the following points :



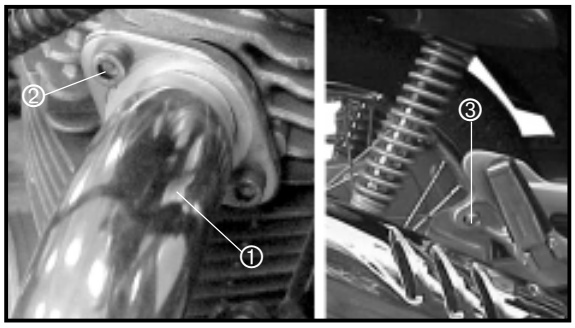
1. Install :
    • Engine Assembly (from the Left side of the Motorcycle)
2. Install
    • Footrest Assy
3. Install :
    • Engine Mount Bolt (front centre) ①
    • Bolt (Engine Mount stay front upper) ②
    • Bolt (Engine Mount stay front lower) ③
    • Engine Mount Bolt front lower ④
    • Engine Mount stay ⑤
    • Engine Mount Bolt (bottom rear) ⑥
    • Engine Mount Bolt (upper rear) ⑦
    • Engine mount stay upper ⑧
    • Bolt AIS Mounting on stay ⑨ - 2 Nos.
    • Engine Mount Stay ⑩

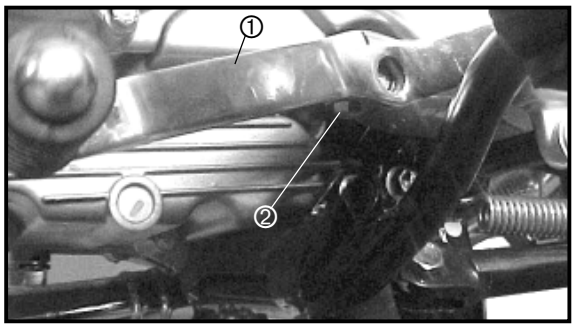


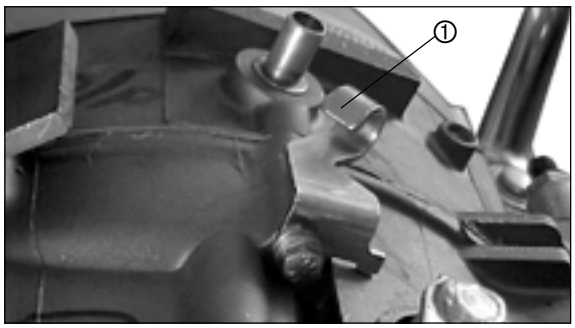
4. Tighten :
    • Bolts Foot Rest Assembly

	Bolts (foot rest) : **17.5 Nm (1.75 m.kg, 13 ft lb)**

Engine Mount Bolt (Rear) :
38 Nm (3.8 m.Kg.27.5 ft. lb)
Bolt (Engine mount Stay) :
38 Nm (3.8 m..kg, 27. 5 ft.lt)
Engine mount bolt (upper)
38 Nm (3.8 m..kg, 27. 5 ft.lt)
Bolt (Engine Mount Stay front upper)
55 Nm (5.5 m.kg., 40 ft.lb)
Bolt (Engine Mount stay front lower)
55 Nm (5.5 m.kg., 40 ft.lb)
Engine Mount Bolt (Front lower)
38 Nm (3.8 m.kg., 27.5 ft.lb)
Engine Mount bolt (from upper))
38 Nm (3.8 m.kg., 27.5 ft.lb)







5. Install :
   - Gasket
   - Exhaust pipe ①
   - Bolts Exhaust Pipe ② - 2 nos
   - Bolt (Muffler) ③

Bolts (Exhaust Pipe) :
10 Nm (1.0m. kg, 7.2 ft. lb)
Bolt (Muffler) :
15 Nm (1.5 m.kg, 11 ft lb)

6. Install :
   - Shift Pedal ①
7. Tighten :
   - Bolt Shift Pedal ②

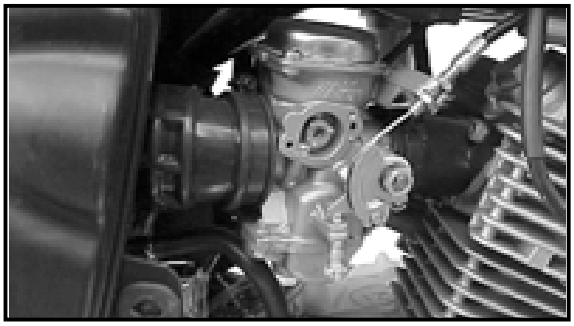
Bolt (Shift Pedal):
10 Nm (1.0m. kg, 7.2 ft. lb)

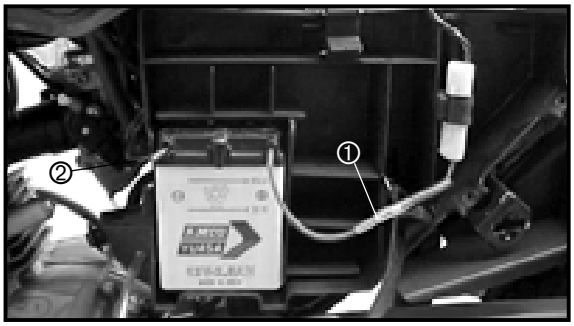
8. Install :
   - Stay Clutch Cable ①

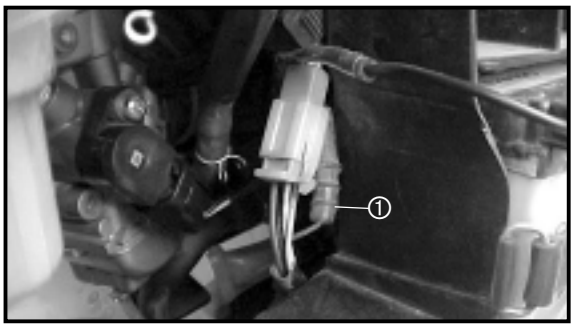
Bolt (cable stay) :
7 Nm (0.7 m.kg, 5.1 ft. lb)

9. Install
   - Clutch cable
   - Adjust Clutch Cable free play at Lever end
     Refer “CLUTCH ADJUSTMENT” in Chapter 3, Page no 3-17

10. Adjust
    Drive Chain Slackness
    Refer to “DRIVE CHAIN SLACK ADJUSTMENT” section in Chapter 3, Page no 3-20







11. Install:
    • Carburetor
    Refer to “CARBURETOR “ section in Chapter 5 page no 5-7
12. Tighten:
    • Air Filter Case Screws

	Bolts (Air Filter Case): 7 Nm (0.7 m.kg, 5.1 ft.lb)

13. Install
    • Battery Box
    • Battery
    • Battery Flap

	Bolts (Battery Box) 3.8 Nm (0.38 mkg), 3 ft lb

14. Connect
    • Battery Leads
    • Sensor Coil Lead Coupler ①

CAUTION:

Connect the positive lead ① First and then the negative lead ②

15. Install
    Spark Plug Cap
16. Fill
    • Crankcase
    Refer to “ENGINE OIL REPLACEMENT” section in Chapter 3, Page no 3-14
17. Adjust :
    • Idle Speed
    Refer to “IDLING CO. MEASUREMENT AND ADJUSTMENT” in Chapter 3, Page no 3-8
18. Adjust :
    • Throttle cable Free play
    Refer to “THROTTLE CABLE ADJUSTMENT” in Chapter 3, Page no 3-9

CHAPTER 5

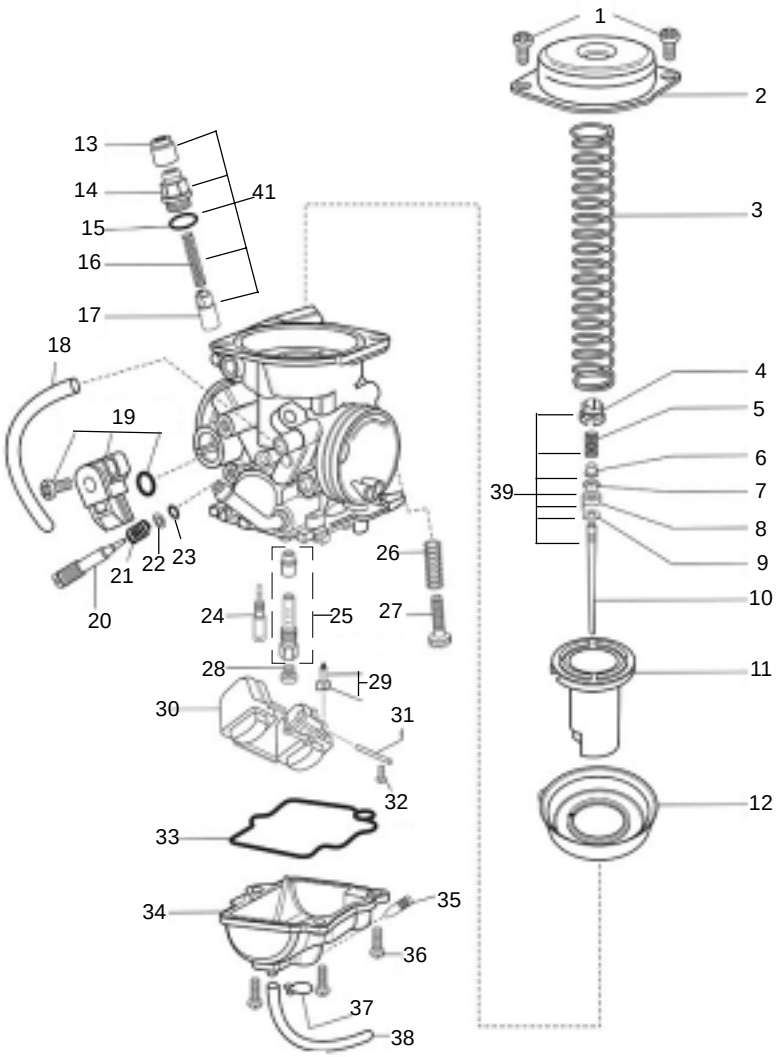
CARBURETION

CARBURETOR VIEW 5-1
REMOVAL 5-2
DISASSEMBLY 5-3
INSPECTION 5-4
ASSEMBLY 5-6
INSTALLATION 5-7
TUNING 5-8
FUEL LEVEL ADJUSTMENT 5-9
THROTTLE POSITION SENSOR (TPS) 5-10
AIR INDUCTION SYSTEM 5-12

CARBURETOR

1	SCREW (TOP COVER)	17	PLUNGER	32	FLOAT PIN FIXING SCREW
2	TOP COVER	18	AIR VENT HOSE	33	FCB O-RING
3	PISTON VALVE SPRING	19	THROTTLE POSITION SENSOR (TPS) KIT	34	FLOAT CHAMBER BODY ASSY
4	HOLDER (JET NEEDLE)	20	PILOT SCREW	35	DRAIN SCREW
5	JET NEEDLE RETAINER SPRING	21	SPRING	36	FCB - FIXING SCREW
6	RING	22	O-RING	37	CLIP FOR DRAIN HOSE
7	JET NEEDLE E-RING	23	WASHER	38	DRAIN HOSE
8	JET NEEDLE RING	24	PILOT JET ASSY.	39	NEEDLE SET KIT
9	WASHER	25	HOLDER	40	STARTER SET KIT
10	JET NEEDLE	26	IDLE ADJUSTER SPRING		
11	PISTON VALVE ASSY	27	IDLE ADJUSTER SCREW		
12	DIAPHRAGM (PISTON VALVE)	28	MAIN JET		
13	CAP PLUNGER	29	NEEDLE VALVE ASSY. KIT		
14	GUIDE HOLDER	30	FLOAT ASSEMBLY		
15	O-RING	31	FLOAT PIN		
16	PLUNGER SPRING				

BS (BUTTERFLY SLIDE) - TYPE



REMOVAL

1 . Remove :
- Side Covers (LH /RH)
  Refer to the “SIDE COVER, SEAT AND FUEL TANK” section in Chapter 3, Page No.- 3-3

2. Close
- Fuel

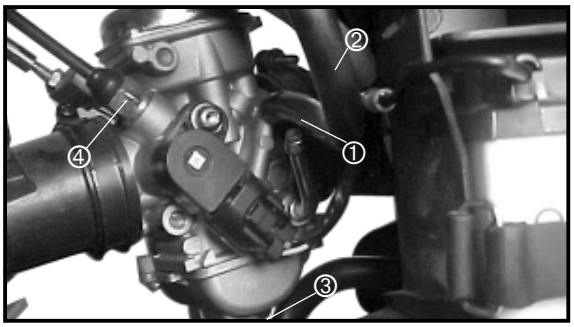
3. Drain :
- Fuel from Float Chamber

NOTE :

Place a rag under the over flow hose to absorb the spilt fuel.

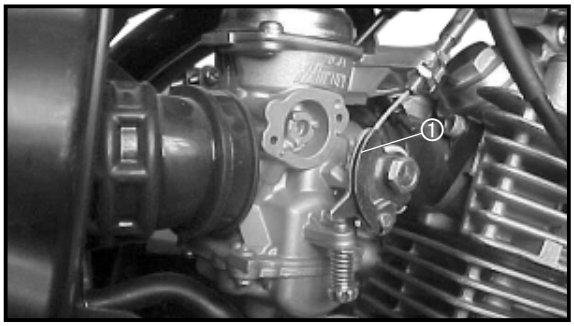
⚠WARNING

Petrol is highly flammable. Avoid spilling fuel on the hot Engine.



4. Disconnect :
- Air Vent Hose ①
- Fuel Hose ②
- Over Flow Hose ③

5. Remove :
- Starter wire Nut - ④



6. Remove
- Throttle Cable - ①

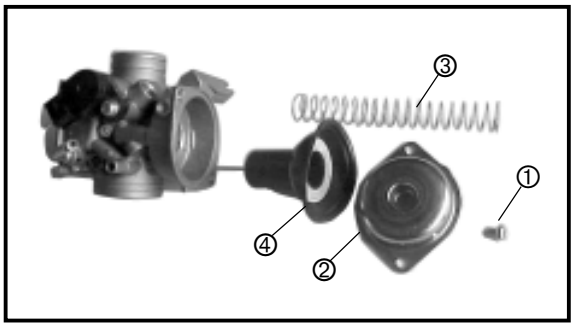
7. Unscrew
- Clamp Front/Rear
- Remove carburettor from Engine.

DISASSEMBLY

NOTE:

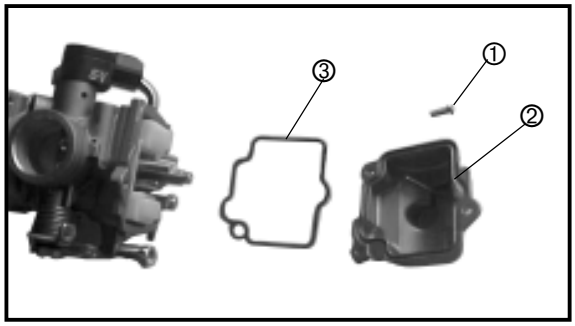
The following parts can be cleaned and inspected without Carburetor Disassembly.

- Throttle Cable
- Starter Plunger Assembly
- Fuel Hose, Air vent Hose, over flow Hose
- Before disassembly of Carburetor clean the outer surface of Carburettor and Check the Starter cable operator.



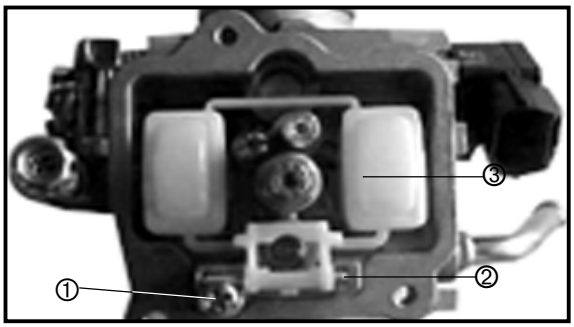
1. Open :
   - Screw (Pan Head) 2-Nos- ①

2. Remove :
   - Cover ②
   - Spring ③
   - Diaphragm with Piston Valve ④

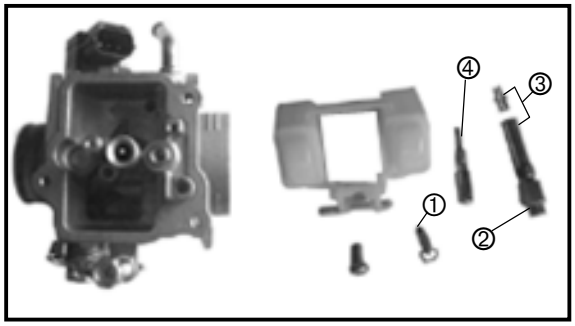


3. Open :
   - Screw (Float chamber) -3 Nos- ①

4. Remove :
   - Float Chamber Body ②
   - Seal Float Chamber ③

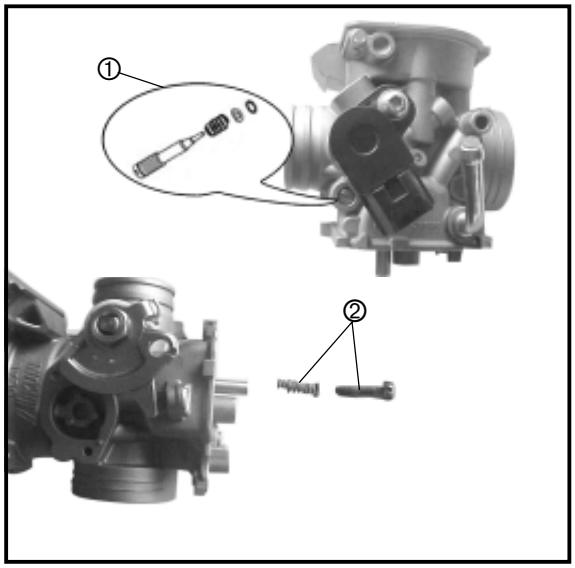


5. Remove :
   - Screw- ①
   - Float Pin- ②
   - Float - ③



6. Remove :
   • Needle Valve- ①

7. Open :
   • Main jet- ②# 127.5
   • Main Nozzle- ③
   • Pilot Jet- ④

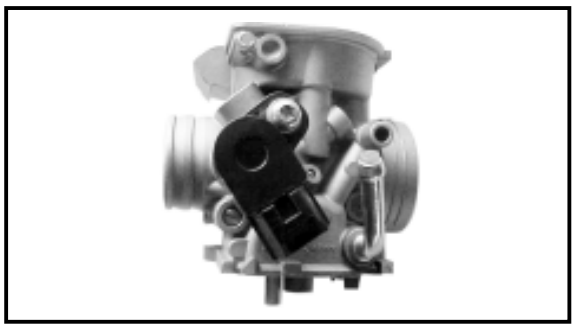


8. Remove :
   • Pilot screw Assy.① (With spring, washer and O'Ring)

9. Unscrew :
   • Throttle Stop Screw with Spring ②

NOTE:
Don't Remove/Unscrew the T.P.S. (Throttle Position Sensor) during normal screw

INSPECTION



Carburetor Body

1. Inspect :
   • Cracks/damage ➔ Replace
   • Fuel Passages Blockage ➔ Clean with petrol and Compressed air.
   • Contamination in jet housings ➔ Clean

Carburetor Float Chamber Body

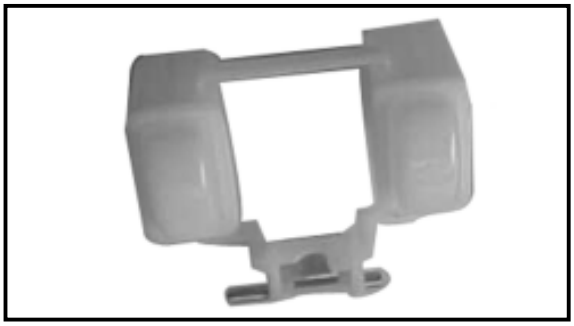
1. Inspect
   • Cracks/damage ➔ Replace
   • Fuel Starter Passage Blockage ➔ Clean with petrol and compressed air
   • Contamination in Starter jet ➔ Clean

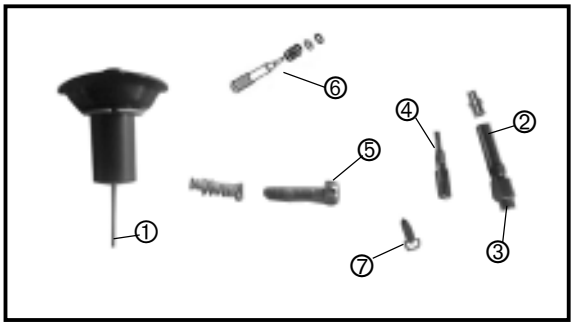
****

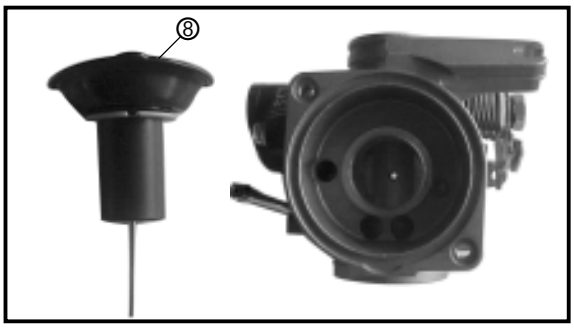
Cleaning Steps :

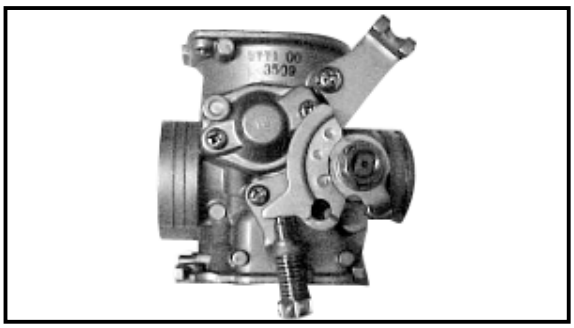
- Wash the Carburetor in petroleum based solvent. (Do not use any caustic cleaning solution)
- Blow all passages and Jets with compressed air.

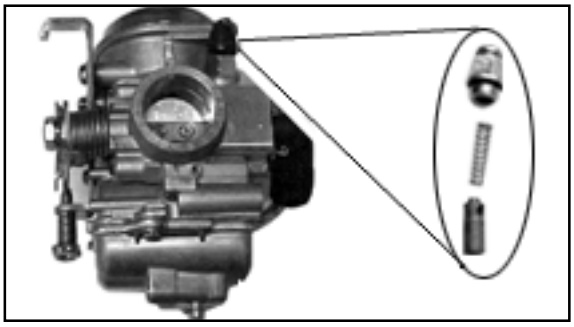
****











Float

1. Inspect :
   - Damage/Leakage ➔ Replace

Jets Screws Diaphragam

1. Inspect :
   - Jet Needle ①
   - Main Nozzle ②
   - Main Jet ③
   - Pilot jet ④
   - Throttle Stop Screw ⑤
   - Pilot screw with 'O' Ring, spring and washer ⑥
   - Needle Valve ⑦
   - valve seat
   - Bends/wear/damage Replace

   Blockage ➔ Blow the Jets with compressed air

2. Inspect

   Diaphragam damage ⑧ - Replace

Piston Valve

1. Check :
   - Free movement

   Insert the Piston Valve with Diaphragm in Carburetor body, and check for free movement

   Hinderance ➔ Clean/Replace

Throttle Valve

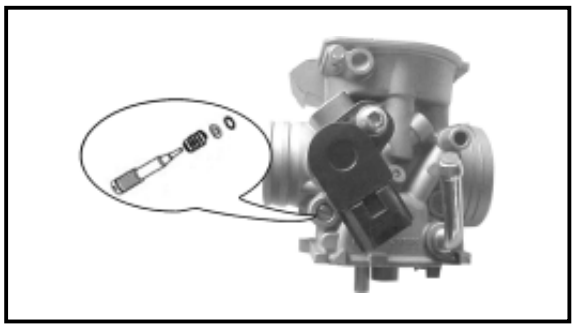
1. Check :
   - Free movement with throttle lever ➔ Clean and Lubricate.

   Hinderance ➔ Clean/Replace

Starter Assembly

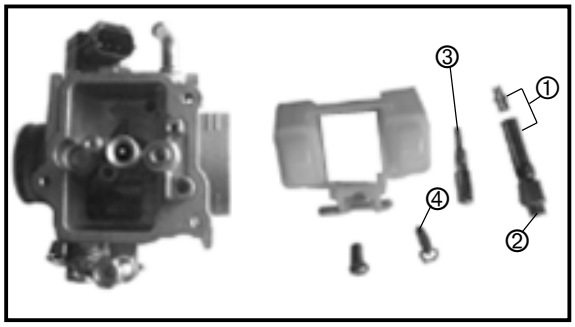
1. Inspect :
   - Starter plunger movement
   - Starter spring
   - Starter wire

ASSEMBLY

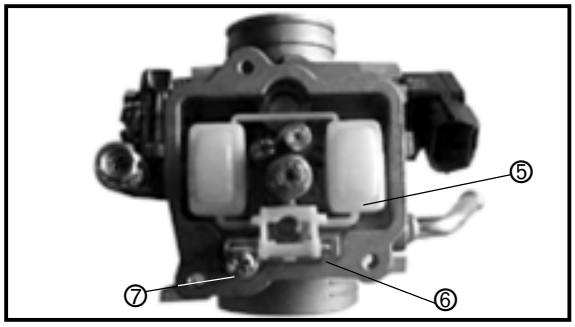


Reverse the disassembly procedure.

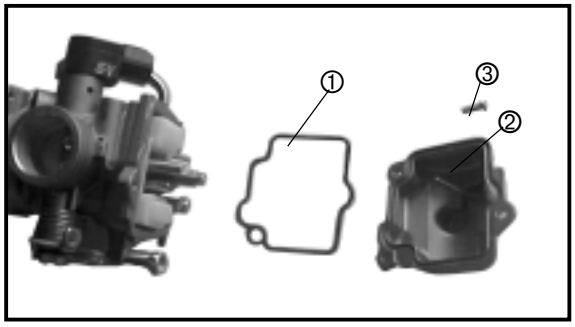
1. Wash
   - All the parts in clean petroleum based solvent
   - Always use new 'o' Rings
2. Install :
   - Pilot screw assembly ①



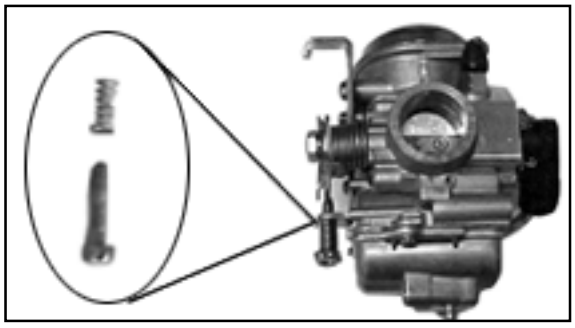
3. Install :
   - Main Nozzle ①
   - Main Jet ②
   - Pilot Jet ③
4. Install :
   - Needle valve assembly ④
   - Float ⑤
   - Float Pin ⑥



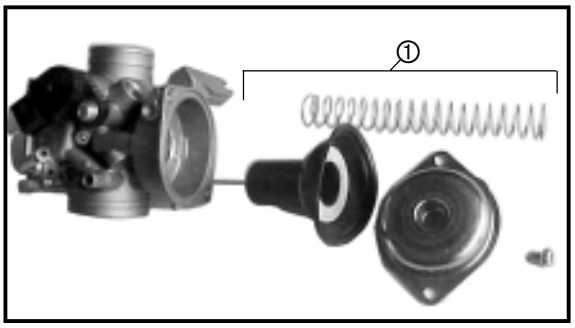
5.Tighten :
   - Screw float Pin ⑦



6. Install
   - Seal Float chamber ① **New**
   - Float chamber ②
   - Screw - 3 Nos. ③



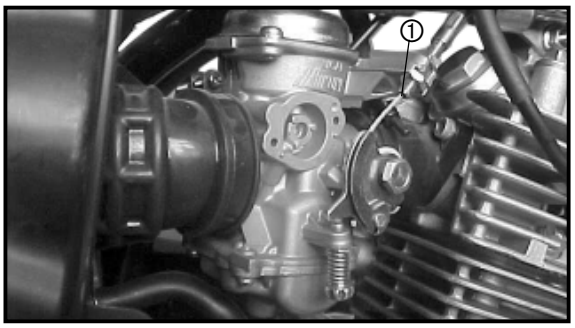
7. Install
   - Throttle stop screw assembly ①

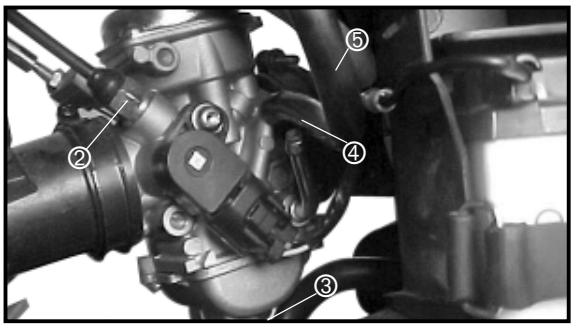


8. Install
   • Piston Valve Assy. with Diaphragm ①

NOTE :
Hold the piston Valve Assy. with diaphragm open condition and Aligns the diaphragn match mark with carburetor mark,, Then put the pan head with spring on Top of diaphragn press the spring to same holding position of piston Valve and tighten the screw pan head. After Tighting the screw, Release the piston Valve Assy.

INSTALLATION
Reverse the “REMOVAL” procedure



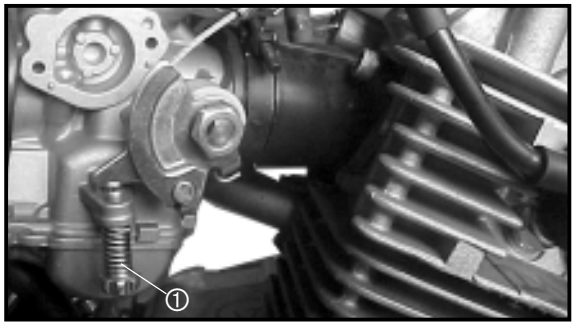


1. Carburettor Inlet Manifold and tighten Air filter Hose.
   Screw Front/Rear Clamp

2. Install :
   Throttle cable assembly ① on carburettor.

3. Starter Cable assy ②.

4. Connect :
   • Over Flow Hose ③
   • Air Vent Hose ④
   • Fuel Hose ⑤



8. Adjust :
   • Idling speed by Throttle Stop Screw ①

	Engine Idling Speed : **1300 - 1500 R.P.M.**

9. Adjust :
   • Throttle Cable free play
   Refer to "THROTTLE CABLE ADJUSTMENT" in Chapter 3, Page no 3-9

Carburetor Tuning

'CO MEASUREMENT AND ADJUSTMENT"

1. Start the Engine and let it worm up by running approximately 4 kms.
2. Attach :
   • Tachometer to the Spark Plug lead
3. Check :
   • Engine idling speed
   If out of sepecification ➔ adjust

	Engine Idling Speed : **1300 - 1500 R.P.M.**

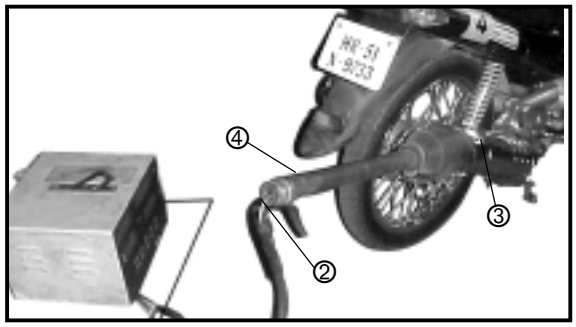
****

Adjustment Steps

Turn the Throttle Stop Screw ① in or out until specified idling speed is obtained.

Turning in ➔ RPM Increases **Turning Out ➔ RPM Decareses**

****

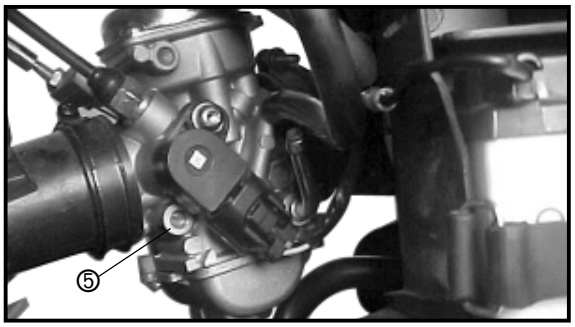


4. Insert :
   • Sampling probe ② of 'CO' tester (calibrated) to the exhaust pipe ③ using suitable adapter ④

	'CO' density : **2.5% ± 1.5% v/v**

   If out of specification ➔ adjust
5. Adjust :
   • 'CO' density through pilot screw

****



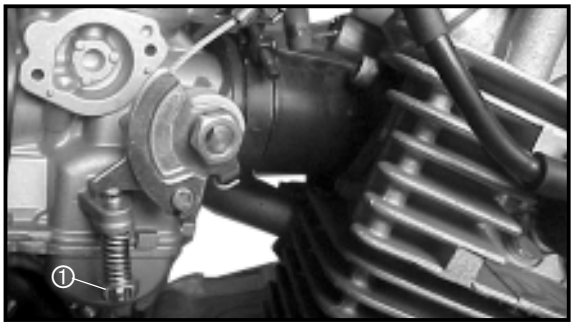
Adjustment Steps

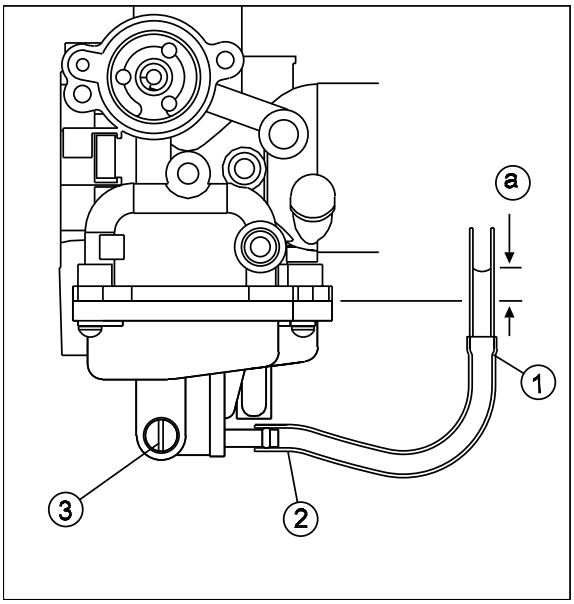
Turn the Pilot Screw ⑤ in or out until the specified 'CO' density is achieved.

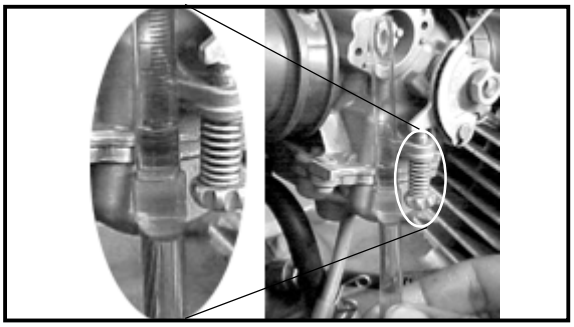
Turning Out ➔ 'CO' density Increases **Turning In ➔ 'CO' density Decareses**

• Reset idling speed as per specifications

****







CAUTION:

Do not disturb settings of the Carburetor if the Engine performance is O.K.

- **If required, must record the existing setting (No. of turns) of the Pilot Screw.**
- **To counter check the setting of the Pilot Screw, follow the 'CO' adjustement procedure.**
- **Ensure proper clamping of the blind plug**

6. Adjust :
   - Idling speed by Throttle Stop Screw ①

	Engine Idling R.P.M. **1300 to 1500 RPM**

****

FUEL LEVEL ADJUSTMENT

1. Measure :
   - Fuel Level ⓐ
   - Out of specification ➔ Adjust

	Fuel level : **6.5 ± 0.5 mm Above the Joint of Main Chamber Body and Float Chamber Body**

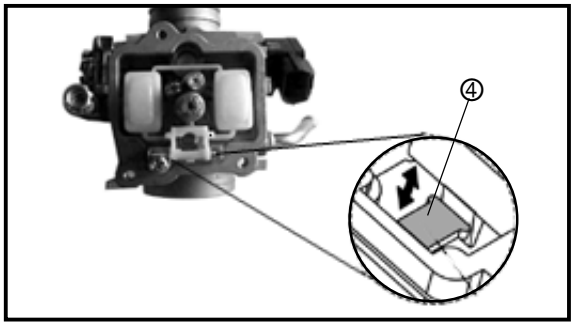
****

Measurement and adjustment steps :

- Place the motorcycle on a level surface on centre stand
- Connect the Fuel Level Gauge ① to the Drain Pipe ②

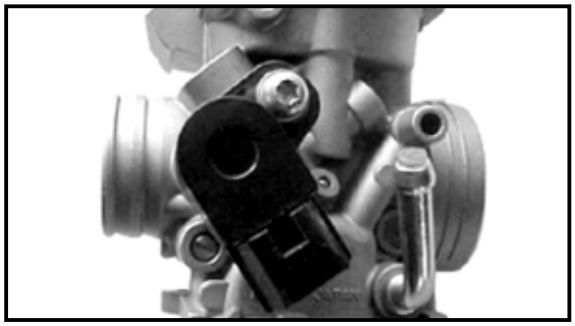
	Fuel Level Gauge

- Loosen the Drain Screw ③
- Hold the Gauge vertically next to the Float Chamber Line
- Measure the Fuel level ⓐ with the Gauge
- If the fuel level is incorrect, adjust the fuel level, using the following steps
- Remove the Carburetor
- Inspect the Valve Seat and Needle Valve
- If either is worn, replace as a set



- Otherwise adjust Float level by bending the Float Tang ④ on the Float slightly up or down as required.
- Install the Carburetor
- Recheck the fuel level
- Adjust Float height through Float Tang ④

By Bending Down ➔ Float Height increase
By Lifting Up ➔ Float Height Decrease



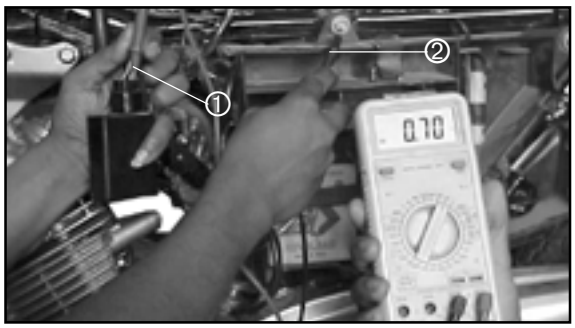
CHECKING AND ADJUSTING THE THROTTLE POSITION SENSOR

- Check/adjust the idle rpm - 1300~1500
- Remove the TPS Coupler from TPS Unit mounted at carbruettor.
- Check TPS resistance at idling throttle position without starting the engine.
- Make connection as below

Multimeter	YTPS
+	⟷ Terminal of Blue wire ①
-	⟷ Terminal of Black wire ②

Specification		
At Idling	⟷	3.5 ~ 6.5 K Ohms

- Check TPS resistance at full throttle position without starting engine



Multimeter	YTPS
+	⟷ Terminal of Yellow wire ①
-	⟷ Terminal of Black wire ②

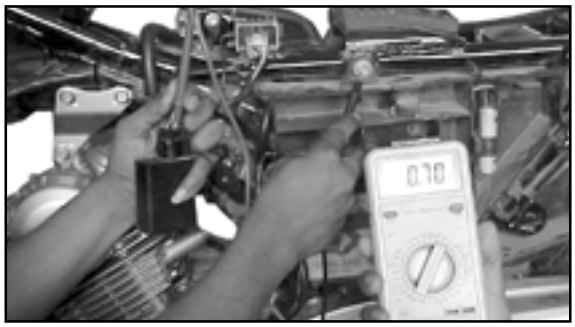
Specification		
By slowly opening the throttle	⟷	0 ~ 5 K Ohms

If out of specifi cations, replace YTPS

- Check/adjust the idle rpm - 1300~1500
- Remove side covers, seat & fuel tank
- Check TPS input & output voltage at idling & full throttle position without starting the engine at CDI unit.
- Check TPS Input voltage
  Make connection as below

Multimeter	YTPS
+	Terminal of Blue wire
-	Terminal of Black wire

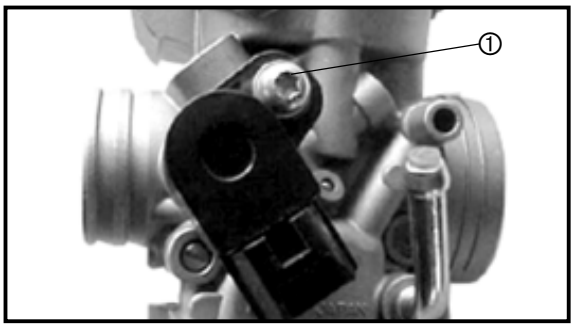
Input Voltage
5 V ± 0.05 V



- Check TPS output Voltage

Multimeter	YTPS
+	Terminal of Yellow wire
-	Terminal of Black wire

Output Voltage
0.7 V ± 0.05 V

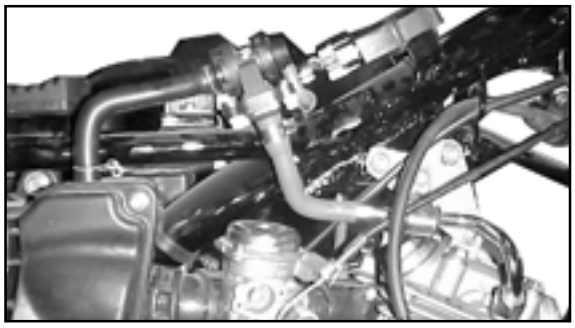


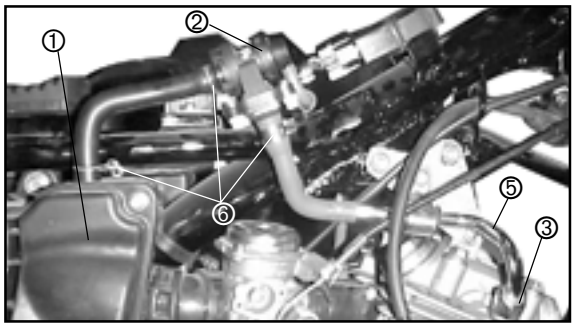
If out of specifications, adjust YTPS Angle with in specifications by loosening YTPS screw ①

AIR INDUCTION SYSTEM
AIR INJECTION

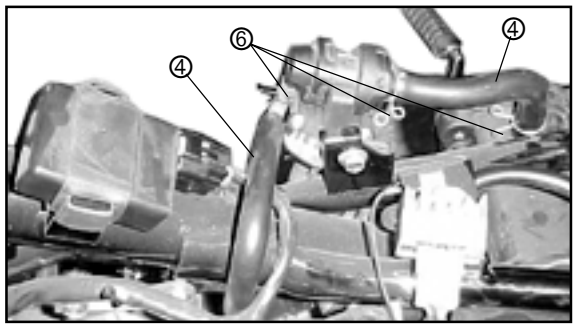
The air induction system burns unburned exhaust gases by injecting fresh air(secondary air) into the exhaust port, reducing the emission of hydrocarbons.

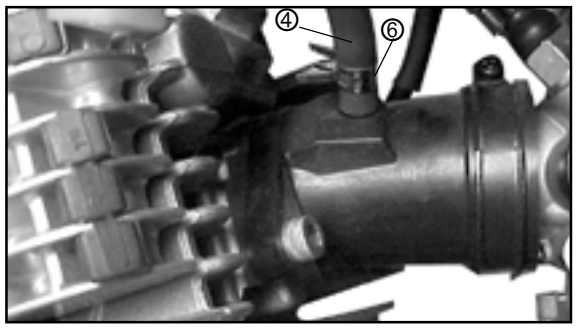
When there is negative pressure at the exhaust port, the reed valve opens, allowing secondary air to flow into the exhaust port. The required temperature for burning the unburned exhaust gases is approximately 600 to 700º C.





1. Air Filter Case ①
2. AIS Unit ②
3. Exhaust Port ③





CHECKING THE AIR INDUCTION SYSTEM

1. Check
   - hose ④
     Loose connection ➔ Connect Properly
     Crack/Damage ➔ Replace
   - Pipes ⑤
     Crack/damage ➔ Replace
   - Clamps ⑥
     for proper clamping

CHAPTER 6

CHASSIS

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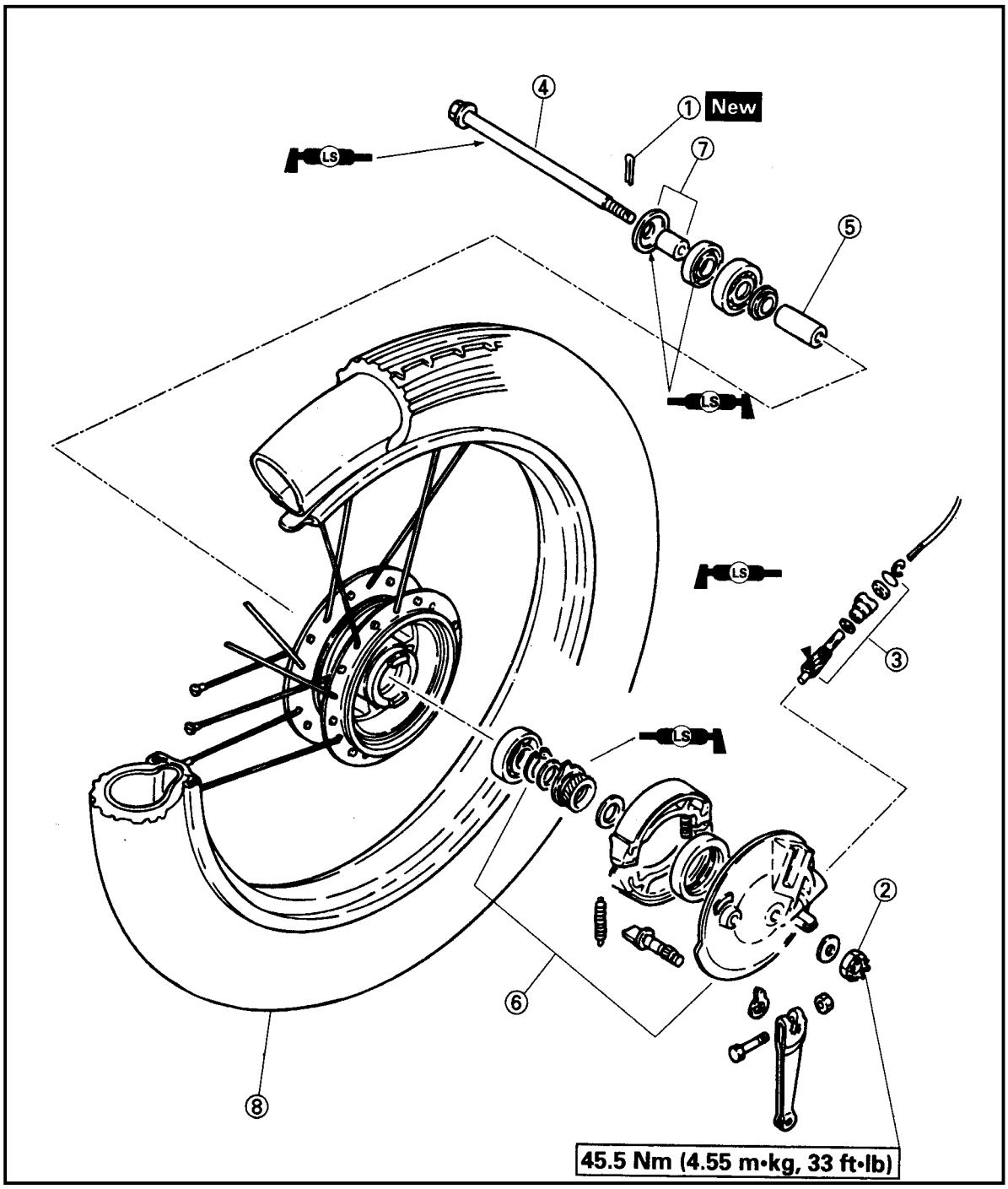
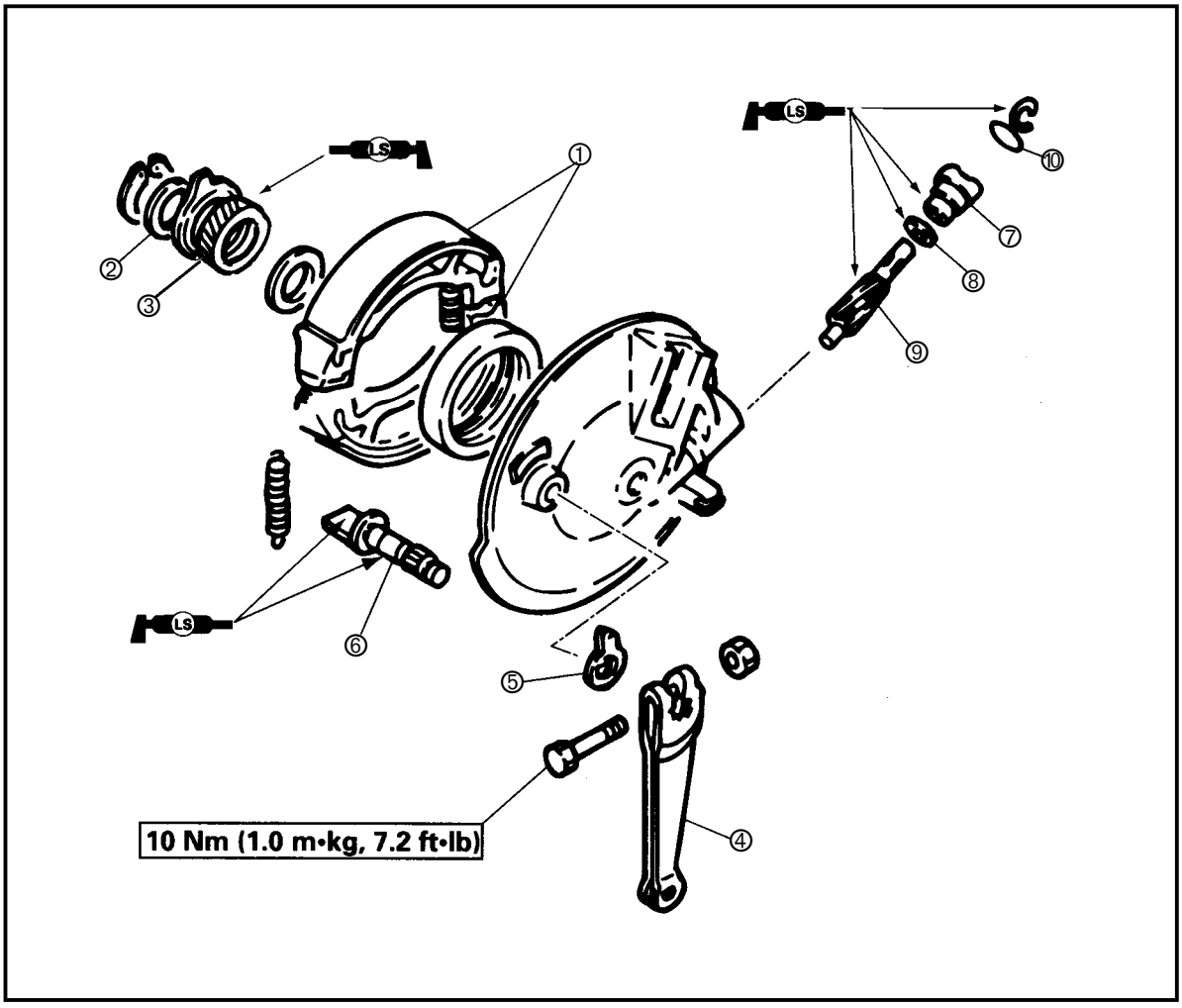
FRONT WHEEL

① Cotter Pin
② Axle Nut
③ Speedometer Cable Assy.
④ Wheel Axle
⑤ Spacer
⑥ Brake Shoe Plate Assy.
⑦ Dust Seal/Collar
⑧ Front Wheel

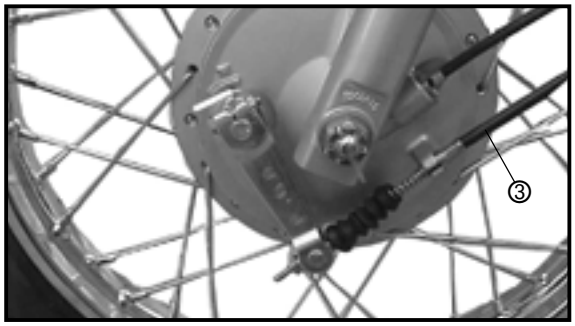


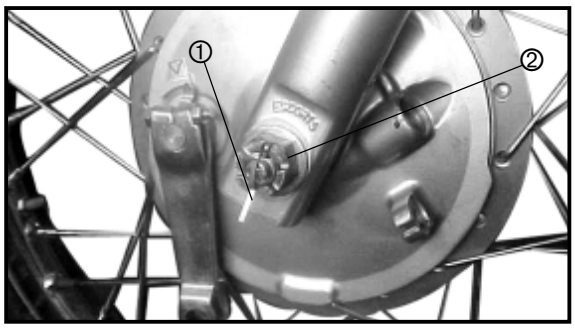
FRONT BRAKE

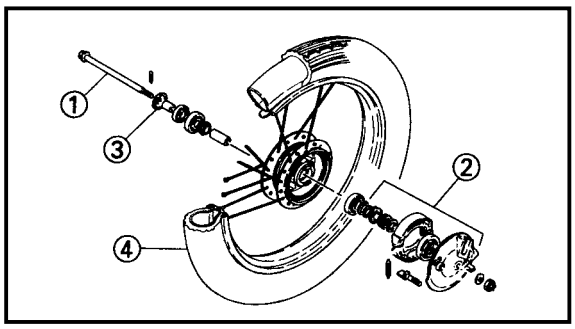
① Brake Shoe Assy.
② Oil Seal
③ Gear drive
④ Lever Camshaft
⑤ Indicator Plate
⑥ Camshaft
⑦ Bush
⑧ Plate Washer
⑨ Gear Meter
⑩ O-Ring



FRONT WHEEL AND FRONT BRAKES







REMOVAL

⚠WARNING

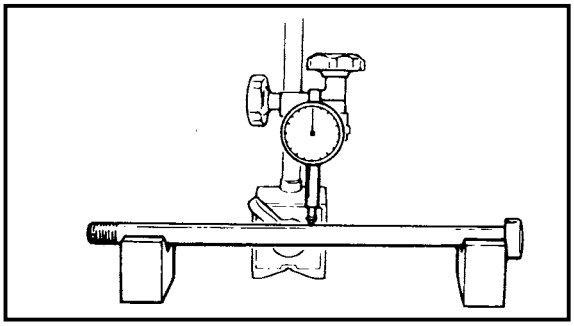
- **Securely support the Motorcycle on the centre stand so that there is no danger of it falling over.**
- **Park the Motorcycle on a level surface**

1. Loosen :
   - Lock nut ① and screw in the adjuster ② fully to loosen the Brake Cable
2. Remove :
   - Front Brake Cable ③ by slacking and removing it first from the Handlebar end and then from the Front Wheel end.
   - Nut
   - Spring
   - Take out Brake wire from slot of Brake Plate
3. Disconnect
   - Speedometer Cable ① by removing the clip ②
4. Remove
   - Cotter Pin ①
   - Nut ②
5. Lift
   - Front Wheel

NOTE :

Place suitable stand under the Engine.

5. Remove
   - Front Wheel Axle ①
   - Brake Shoe Plate Assembly ②
   - Dust Seal/Collar ③
   - Front Wheel ④



Front Wheel Inspection :

1. Inspect
   • Front Wheel Axle
   (by rolling it on a flat surface)
   Bends ➔ Replace

Wheel Axle Bending Limit :
0.25 mm

⚠WARNING

Do not attempt to straighten a bent Axle

2. Inspect :
   • Front Tyre
   Wear/damage ➔ Replace
   Refer to "TYRE INSPECTION" in Chapter 3, Page no 3-26
   • Front Wheel
   Refer to "WHEEL INSPECTION" in Chapter 3, Page no 3-27

3. Check :
   • Spokes
   Bends/damage ➔ Replace
   Loose Spokes ➔ Tighten

Turn the Wheel and tap the Spokes with a Screwdriver

NOTE :

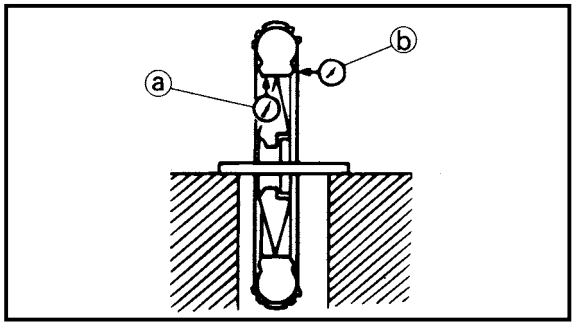
A tight Spoke will emit a clear, ringing tone; a loose Spoke will sound flat.

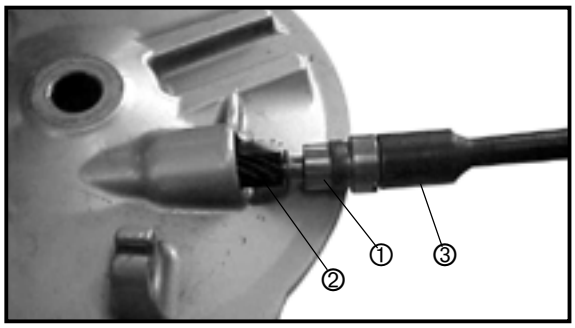
4. Tighten :
   • Loose Spokes
   • Nipple

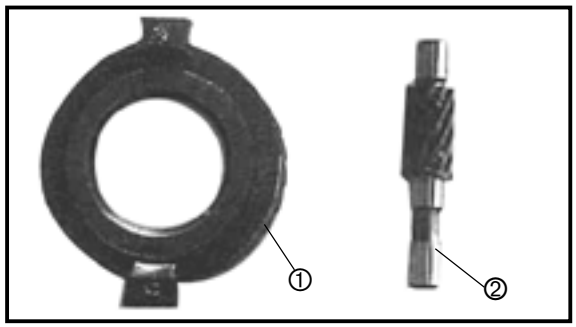
NOTE :

Check the Front Wheel runout after tighteneing the Spokes.

Nipple Tightening Tool
YSST - 629







5. Measure :
   • Front Wheel runout using a height gauge
   Over the specified limits ➔ Correct/Replace

Front Wheel runout limits :
Radial ⓐ : 1.5 mm (max)
Lateral ⓑ : 1.5 mm (max)

6. Inspect :
   • Front Wheel Bearings
   Bearings allow free play in the Wheel Hub or the Wheel does not turn smoothly ➔ Replace
   • Oil Seals
   Wear/damage ➔ Replace
7. Inspect :
   • Collar
   Grooved Wear ➔ Replace the Collar and the Oil Seal as a set

BRAKE SHOE PLATE DIASSEMBLY

1. Remove :
   • Bush ①
   • Meter Gear ②
   Remove the bush using a Meter Gear Bush Tool ③

Nipple Tightening Tool
YSST - 629

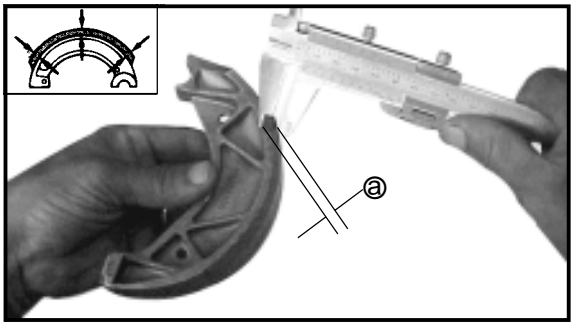
SPEEDOMETER GEAR INSPECTION

1. Inspect :
   • Meter Drive Gear ①
   • Meter Gear ②

FRONT BRAKE INSPECTION

1. Inspect :
   • Brake Lining surface
   Glazed areas ➔ Replace
   Use Coarse Sand Paper for polishing of Brake Lining

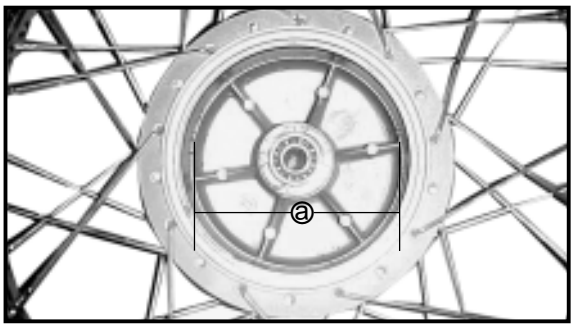
NOTE:
After polishing , wipe the polished particles with a cloth.



2. Measure :
   • Brake Lining thickness ⓐ
   Out of specification ➔ Replace

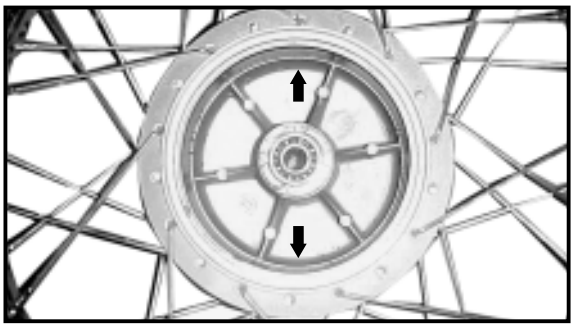
Brake Lining thickness:
Standard : 4 mm
Limit : 2 mm

NOTE :
Replace the Brake Shoes as a set if either is worn to the limit.

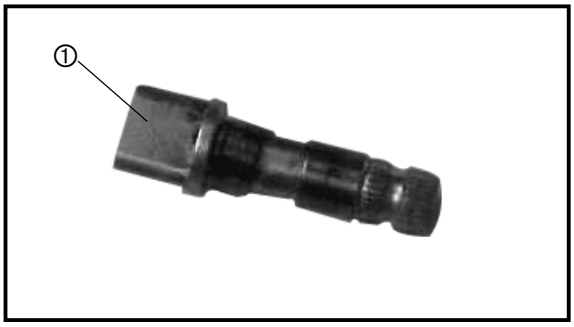


3. Measure :
   • Brake Drum inside diameter ⓐ
   Out of specification ➔ Replace the Wheel Drum

Brake Drum inside diameter:
Standard : 150 mm
Limit : 151 mm



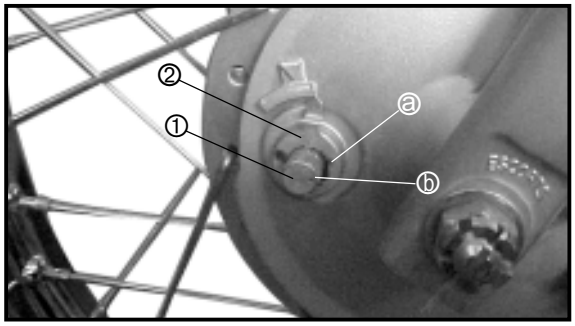
4. Inspect :
   • Brake Drum inner surface
   Oil/Scratches ➔ Repair
   • Oil : Use a Rag soaked in solvent
   • Scratches : Use an emery cloth and polish lightly and evenly.

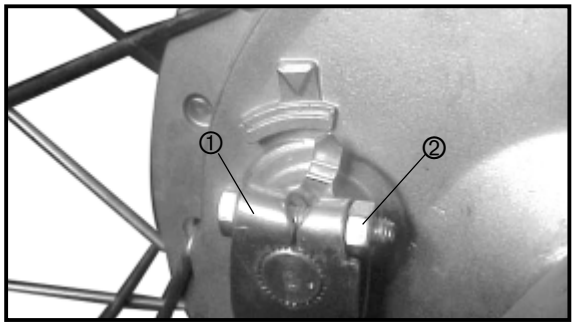


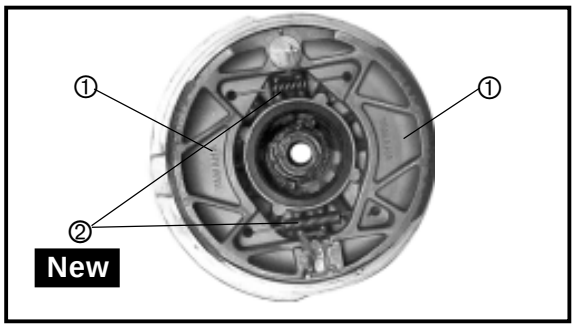
5. Inspect :
   • Camshaft Face ①
   Wear ➔ Replace

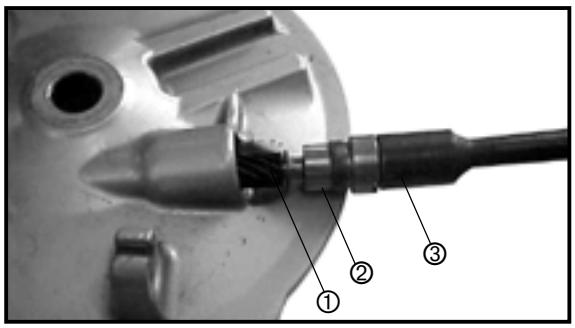
⚠WARNING

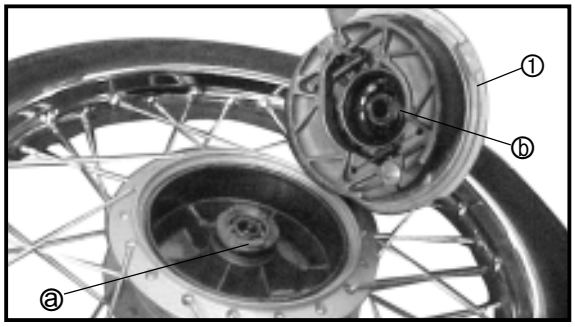
When inspecting the Brake Lining, do not spill oil or grease on the Brake Lining.











BRAKE SHOE PLATE ASSEMBLY

1. Install :
   - Camshaft ①
   - Indicator Plate ②

****

Installation steps :

- Align the projection ⓐ on the Indicator Plate ② with the Camshaft notch ⓑ

****

2. Install :
   - Cam Lever ①
   - Bolt Cam Lever ②

	Cam Lever Nut : 10 Nm (1.0m.kg, 7.2 ft.lb)

3. Install
   - Brake Shoes ①
   - Tension Springs ② **New**

NOTE :

- When installing the Springs and Brake Shoes, take care not to damage the Springs
- Replace the Tension Spring as a set when replacing the Brake Shoes.

⚠WARNING

After installing the Brake Camshaft, remove the excess grease

4. Install :
   - Meter Gear ①
   - Bush ②

Install the Bush using the Spanner -Speedometer Gear Nut

	Spanner - Speedometer Gear Nut YSST - 237

5. Install :
   - Brake Shoe Plate Assembly ①

NOTE :

Make sure that the Wheel Hub and the Speedometer Gear Unit are installed with the two projections ⓐ meshed into the two solts ⓑ

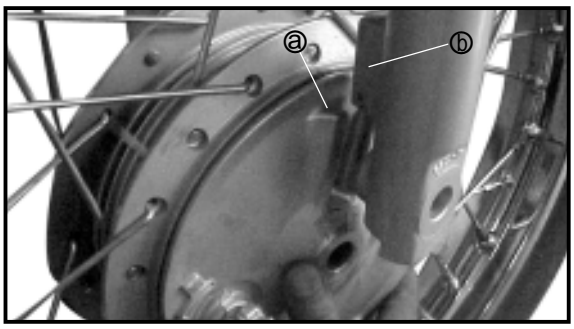
6. Install :
   - Hub Dust Cover
   - Collar

FRONT WHEEL INSTALLATION

Reverse the “REMOVAL” procedure
Note the following points

1. Lubricate :
   - Axle Front Wheel
   - Bearings
   - Oil Seal (lips)
   - Drive/Driven Gear (Speedometer)

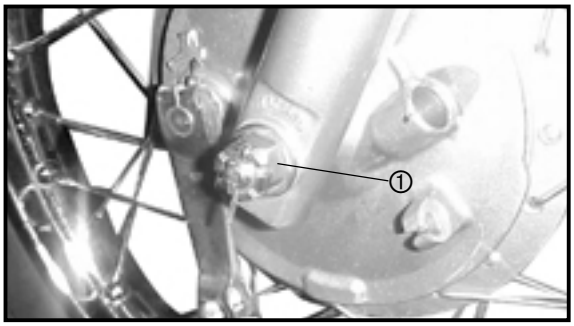
Recommended lubricant :
Lithium Soap base grease



2. Install :
   - Front Wheel

NOTE:

Make sure that the slot ⓐ in the Shoe Plate fits over the Stopper ⓑ on the Front Fork Outer Tube LH



3. Tighten :
   - Front Wheel Axle
   - Axle Nut ① (Front Wheel)

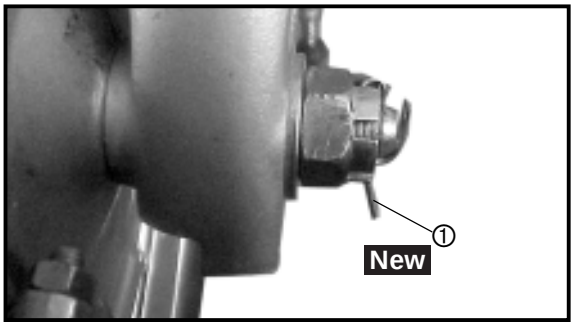
NOTE :

Do not loosen the Axle Nut after Torque tightening. If Axle Nut groove is not aligned with the Wheel axle Cotter Pin hole, align groove to hole by tightening up on the Axle Nut.

CAUTION:

Before tightning the Wheel Axle, Stroke the Front Fork several times to check for proper fork operation

Axle Nut :
59 Nm(5.9 m.kg. 43 ft.lb)

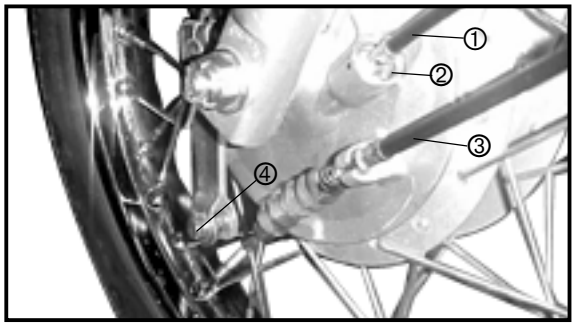


4. Install :

• Cotter Pin ① New and bend its ends.

⚠WARNING

Always use a new Cotter Pin



5 Install :
- Meter Cable ①
- Clip ②
- Brake Cable ③ thru nozzle
- Bush ④
- Nut

⚠WARNING

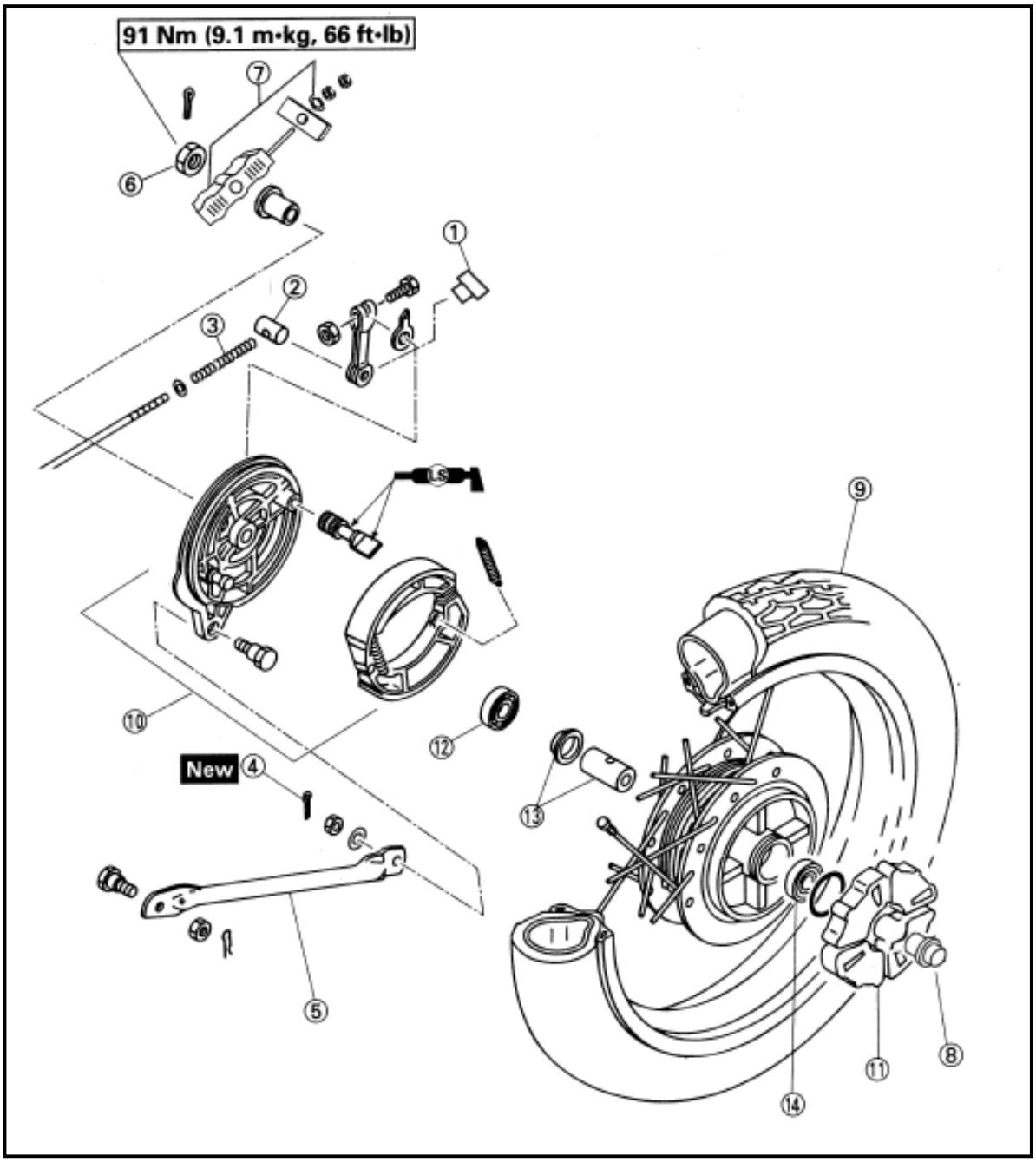
Make sure that the Brake Cable and Meter Cable is routed properly.

6. Check :
- Front Brake for proper operation
  Improper operation ➔ Recheck or disassemble.

7. Adjust
- Brake Lever free play
  Refer to “FRONT BRAKE ADJUSTMENT” section in Chapter 3, Page no 3-18

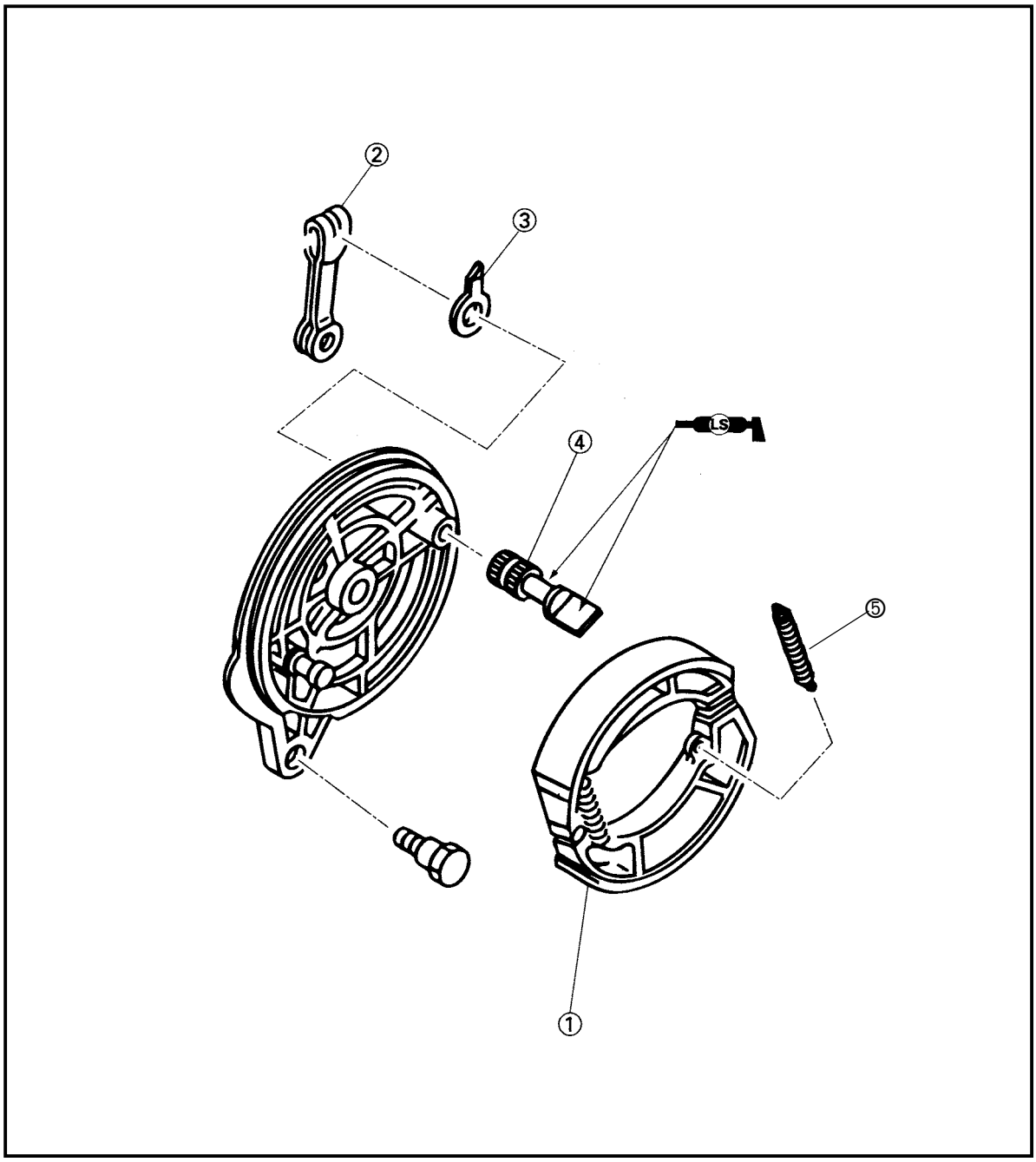
REAR WHEEL

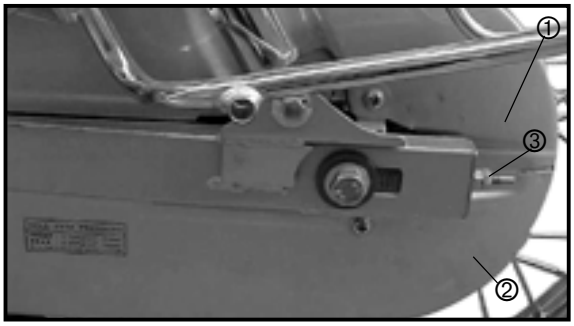
① Adjuster
② Pin
③ CompressionSpring
④ Cotter Pin
⑤ Tension Bar
⑥ Axle Nut
⑦ Chain Puller
⑧ Spacer
⑨ Rear Wheel Assembly
⑩ Brake Shoe Plate Assembly
⑪ Damper
⑫ Bearing
⑬ Spacer/Collar
⑭ Bearing



REAR BRAKE

① Brake Shoe Kit
② Cam Lever
③ Indicator Plate
④ Camshaft
⑤ Spring



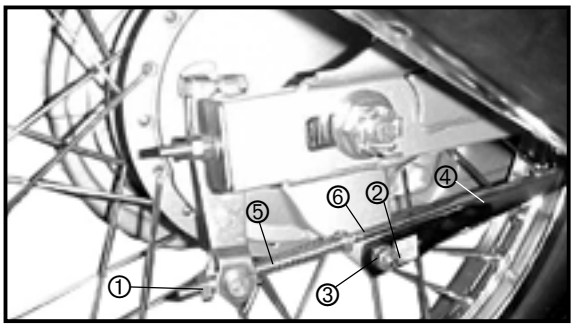


REMOVAL

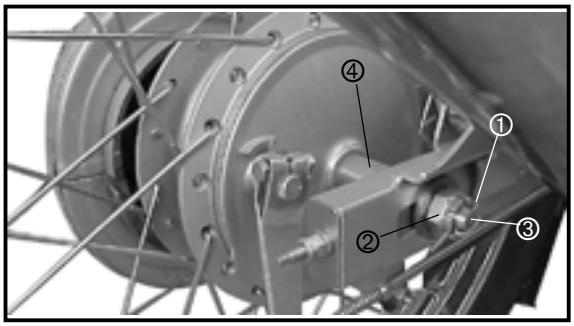
⚠WARNING

- **Securely support the Motorcycle on centre stand so that there is no danger of it falling over**
- **Stand the Motorcycle on a level surface**

1. Remove :
   - Chain Cover (upper ① and lower ②)
2. Loosen
   - Chain Adjuster ③

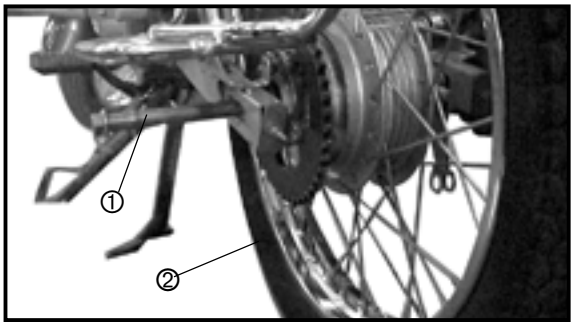


3. Remove :
   - Nut (Rear Brake) ①
   - Cotter Pin ②
   - Nut ③ with Bolt
   - Tension Rod ④
   - Compression Spring ⑤
   - Brake Rod ⑥



4. Remove :
   - Cotter Pin ①
   - Nut (Wheel Axle) ②
   - Wheel Axle ③
   - Collar ④

NOTE :
When removing the Wheel Axle, the Collar will fall off. Take care not to lose it.

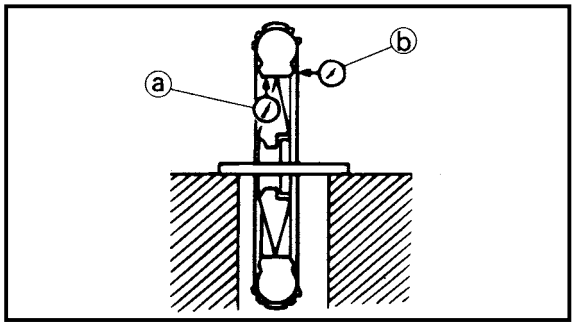


5. Remove :
   - Axle Wheel ①
   - Rear Wheel ②
   - Rear Brake Shoe Plate
     Remove the Rear Wheel Hub. with chain and spacer

REAR WHEEL INSPECTION

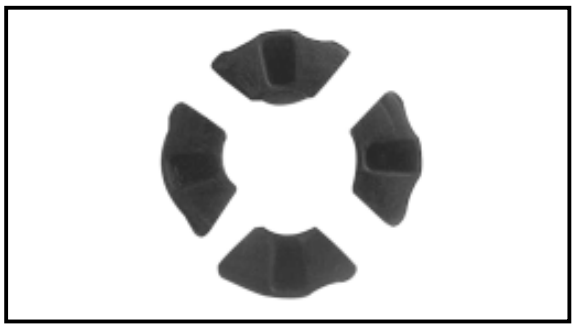
1. Inspect :
   - Axle Rear Wheel
   - Rear Wheel
   - Bearings Rear Wheel
   - Oil Seals

   Refer to “FRONT WHEEL INSPECTION” Page no 6-4



2. Measure :
   - Rear Wheel runout

   Refer to “FRONT WHEEL INSPECTION ” Page no 6-4



3. Inspect :
   - Clutch Hub Damper

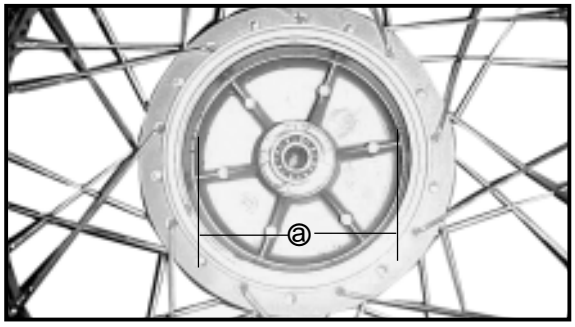
   Wear/damage ➔ Replace

REAR BRAKE INSPECTION

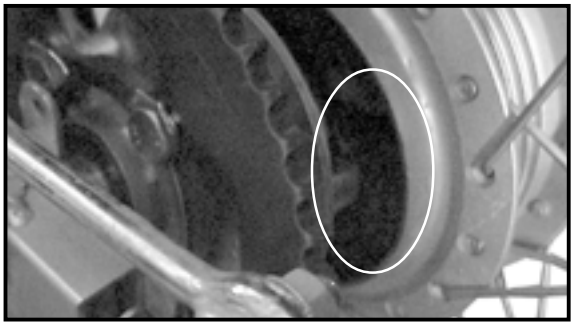
1. Inspect :
   - Brake Lining surface
2. Measure :
   - Brake Lining thickness
3. Inspect :
   - Brake Drum inner surface for Oiliness and Scratches

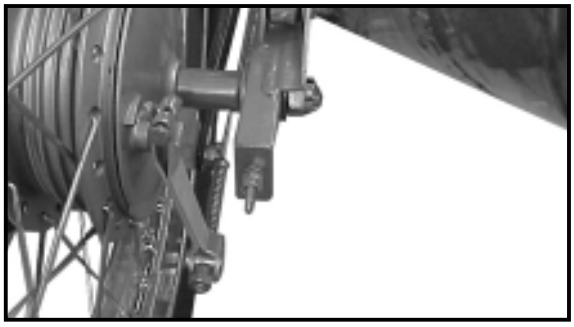
   Refer to “FRONT WHEEL BRAKE INSPECTION” page no 6-6
4. Measure :
   - Brake Drum inside diameter ⓐ

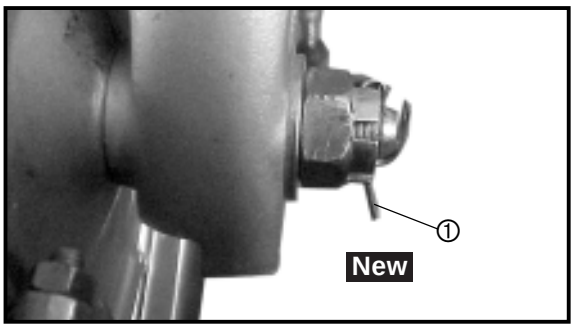
   Out of specification ➔ Replace



Brake Drum inside diameter :
Standard : 130 mm
Limit : 131 mm







REAR WHEEL INSTALLATION

Reverse the “REMOVAL” procedure

1. Install :
   - Chain Adjuster in Rear Swinging fork
   - Rear Wheel Assembly in Sprocket Hub with spacer
   - Brake Shoe Plate Assembly
   - Spacer between Chain Sprocket and Frame
   - Spacer (RH) between brake plate and frame.
   - Axle Rear Wheel

NOTE :

Make sure that the slots in the Rear Wheel Hub Damper fits over the tabs on the Clutch Hub assembly

2. Adjust :
   - Drive Chain Slack
     Refer to “DRIVE CHAIN ADJUSTMENT” section in Chapter 3, Page no 3-20

3. Tighten :
   - Nut Rear Wheel Axle

NOTE :

Do not loosen the Axle Nut after torque tightening. If Axle Nut Groove is not aligned with the Wheel Axle Cotter Pin Hole, align Groove to hole by tightening up on the Axle Nut.

	Nut (Rear Wheel Axle) : **91 Nm (9.1 m.kg., 66 ft.lb)**

4. Install :
   - Cotter Pin ① **New**

NOTE :

Bend the ends of the Cottor Pin

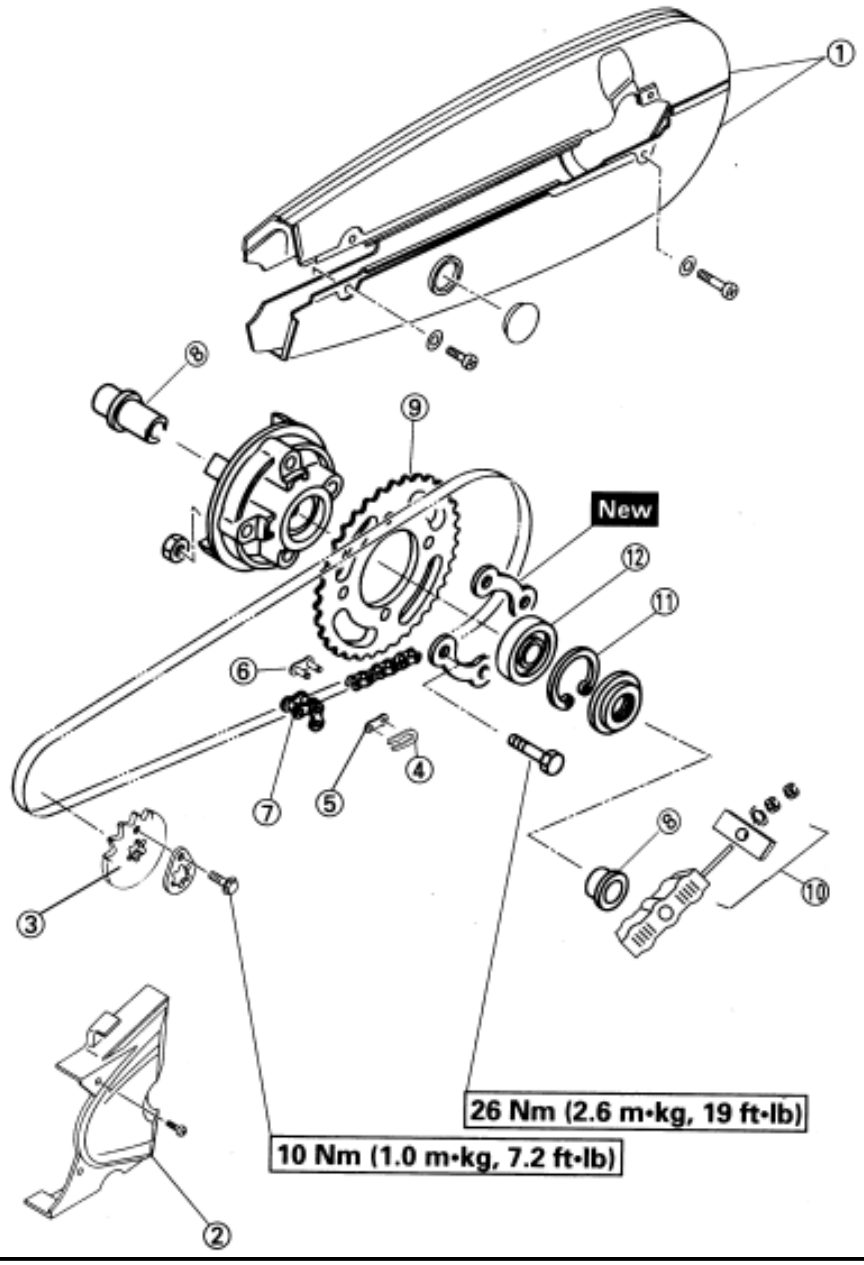
⚠WARNING

Always use a new Cottor Pin

5. Check :
   - Rear Brake Pedal free play
     Refer to “REAR BRAKE ADJUSTMENT” section in Chapter 3, Page no 3-18

DRIVE CHAIN AND SPROCKETS

① Chain Case
② Crankcase Cover 3
③ Drive Sprocket
④ Clip Chain Joint
⑤ Link Plate
⑥ Chain Joint
⑦ Drive Chain
⑧ Spacer
⑨ Driven Sprocket Assembly
⑩ Chain Tensioner Adjuster
⑪ Circlip
⑫ Oil Seal

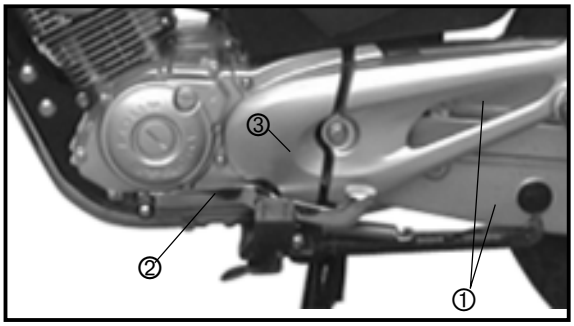


REMOVAL

1. Stand the Motorcycle on a level surface.

⚠WARNING

Securely support the Motorcycle on Centre stand so that there is no danger of it falling over.

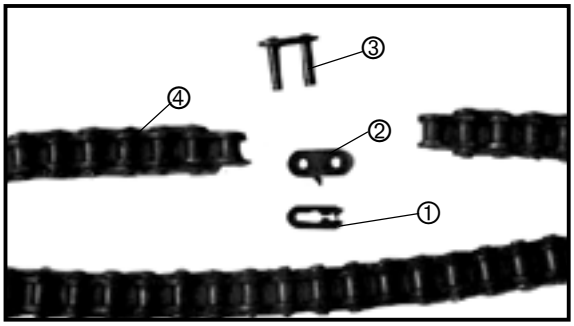


2. Remove :
   - Chain Case (upper and lower) ①
   - Shift pedal ②
   - Crankcase Cover 3 ③
   - Drive Sprocket

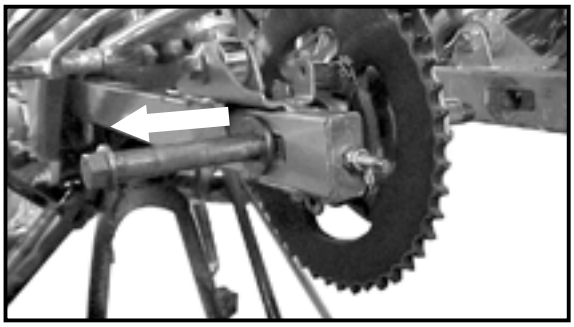
   Refer to “ENGINE REMOVAL” Section in Chapter 4, Page No 4-1

3. Remove
   - Rear Wheel

   Refer to “REAR WHEEL” Section Page no 6-12

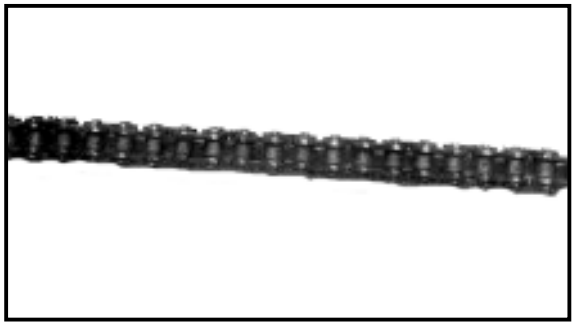


4. Remove :
   - Chain Joint Clip ①
   - Link Plate ②
   - Chain Joint ③
   - Drive Chain ④



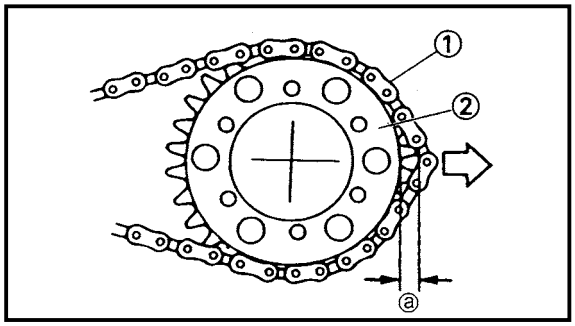
5. Remove :
   - Rear wheel Assy. removal

   Refer to Rear Wheel removal on page 6-12
   - Rear wheel Sprocket Assy.

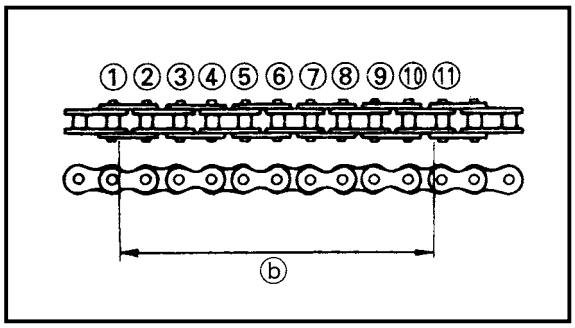


DRIVE CHAIN INSPECTION

1. Inspect :
   • Drive Chain stiffness
   Stiffness ➔ Clean and Lubricate or replace



2. Inspect :
   • Drive Chain ①
   • Driven Sprocket ②
   More than 1/2 tooth wear ⓐ ➔ Replace the Drive Chain and both the Sprockets as a set.

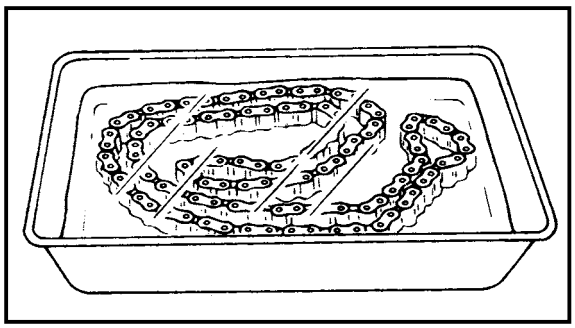


3. Measure :
   • 10 link length ⓑ (Drive Chain)
   Out of specification ➔ Replace the Drive Chain

10 link length limit :
127 mm

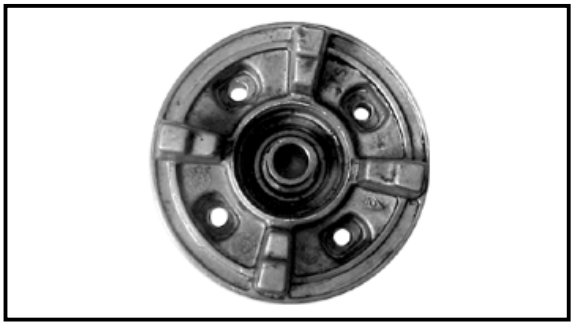
NOTE :

- Tighten the Drive Chain with a fingers before measuring
- 10 link length is the distance ⓑ between the inside edge of Roller ① and ⑪ as shown.
- 10 link length measurement should be done at two or three different places.



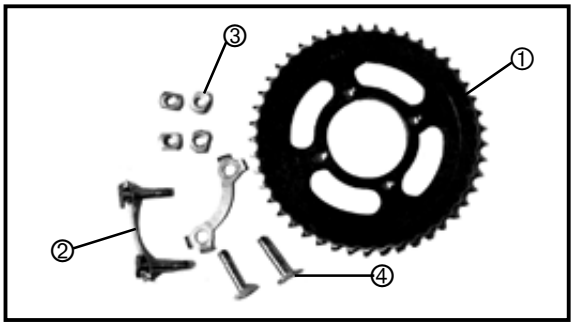
4. Clean :
   • Drive Chain
   Put it in Kerosene and brush off as much dirt as possible. Then remove the Drive Chain from the ketosene and dry it.

Drive Chain Lubricant :
Engine Oil



CLUTCH HUB INSPECTION

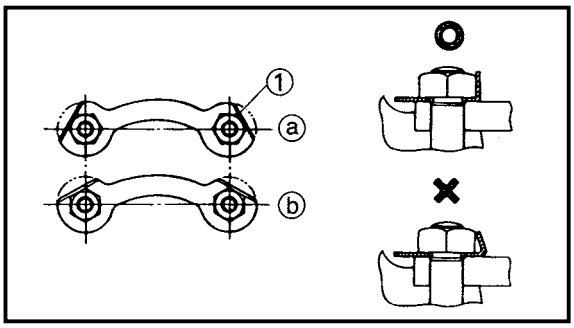
1. Inspect :
   Clutch Hub
   Wear/damage/cracks ➔ Replace



DRIVEN SPROCKET ASSEMBLY

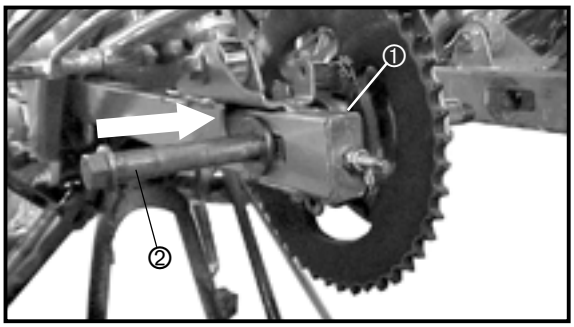
1. Install
   • Driven Sprocket ① on Clutch Hub
   • Lock Washer ② **New**
   • Nut ③
   • Bolt ④

	Nut (Driven Sprocket): 26 Nm (2.6 m.kg, 19 ft.lb)



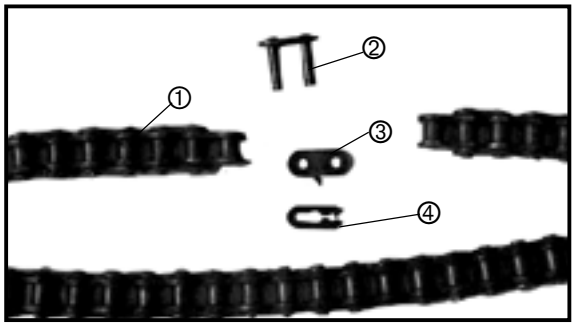
NOTE :
Tighten the Nuts in a crisscross pattern

2. Bend :
   Lock Washer Tab ①
   (along a flat side of the end)

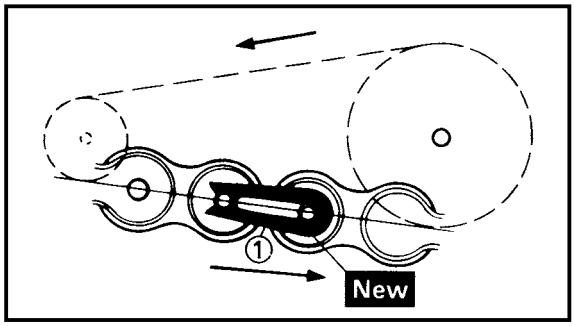


DRIVEN SPROCKET AND DRIVE CHAIN INSTALLATION

1. Install :
   - Chain Tensioner in Rear Swinging fork
   - Driven Sprocket Spacer ① with Drive Sprocket Assembly
   - Axle Rear Wheel ② with Washer.
2. • Install Brake Shoe plate with Spacer (RH Side).



3. Install :
   • Drive Chain ①
   • Chain Joint ②
   • Plate ③
   • Chain Joint Clip ④



4. Install :
   Clip ① **New**

CAUTION:

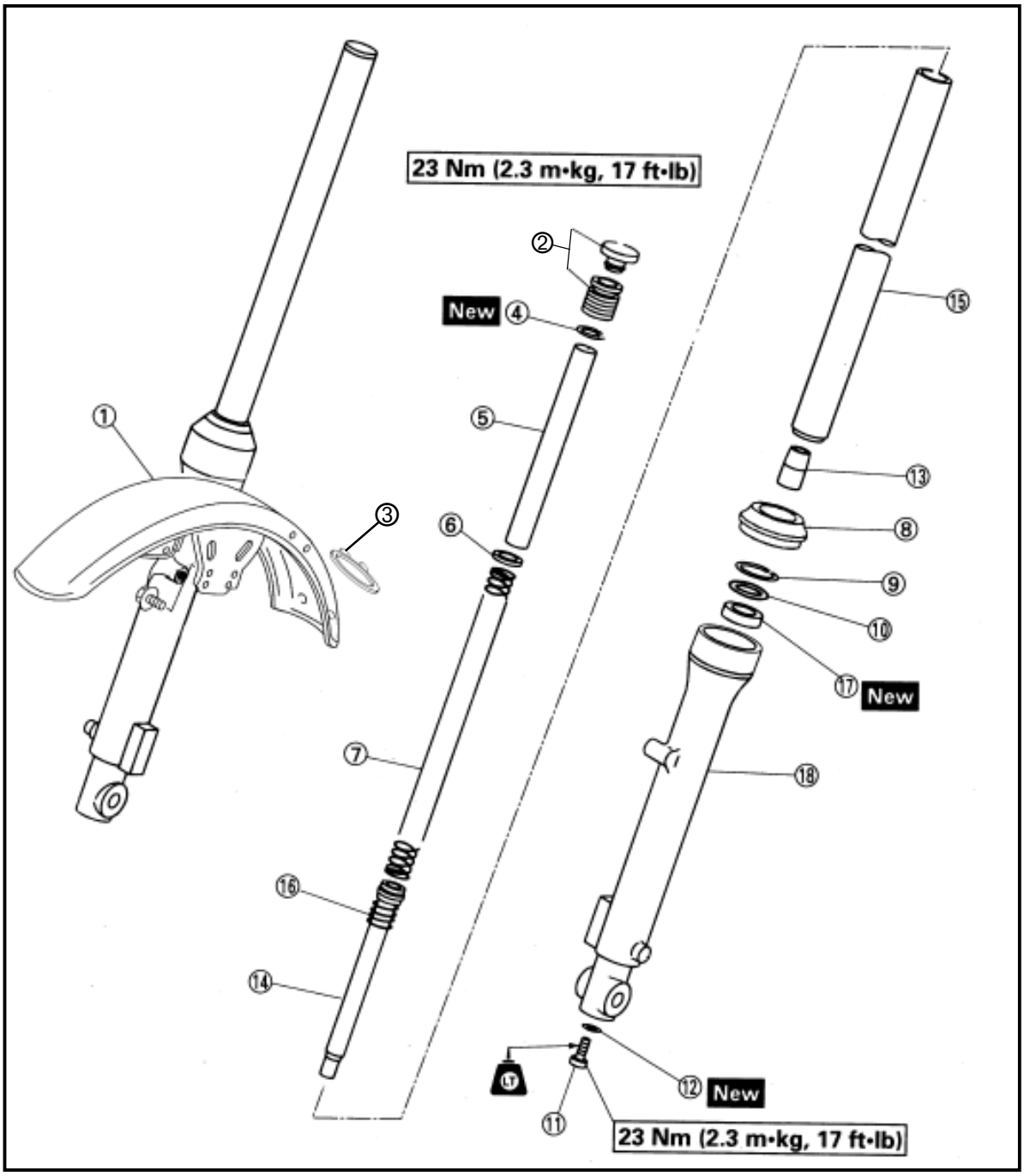
Be sure to install the Chain Joint Clip to the direction as shown

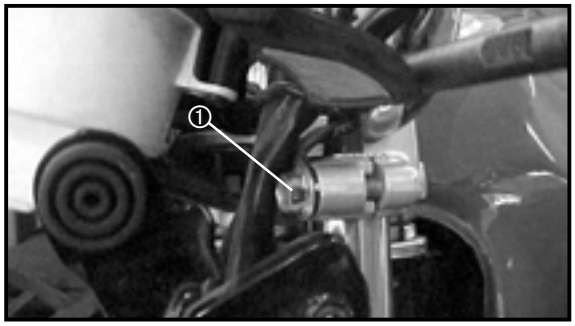
5. Install :
   • Chain Case (upper)
   • Chain Case (lower)
   • Crank Case Cover - 3
   Refer to “ENGINE REMOVAL” section in Chapter 4 Page no 4-1

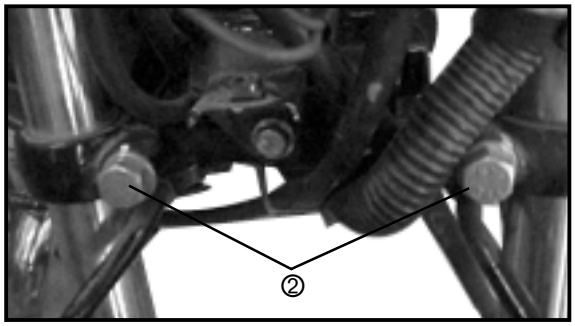
6. Adjust :
   • Drive Chain Slack
   Refer to “DRIVE CHAIN SLACK ADJUSTMENT” section in Chapter 3, Page no 3-20

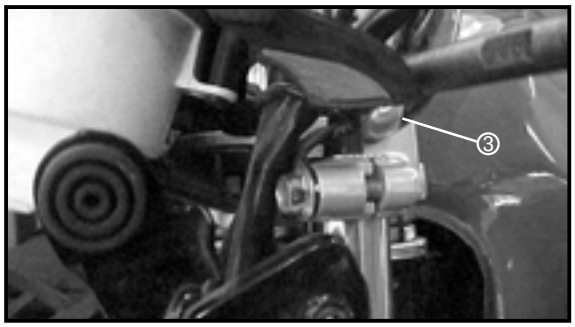
FRONT FORK

① Front Fender
② Cap Bolt with Gromet
③ Holder Cable
④ O Ring
⑤ Collar
⑥ Spring Seat
⑦ Fork Spring
⑧ Seal Dust
⑨ Ring Snap
⑩ Washer
⑪ Bolt
⑫ Gasket
⑬ Spindle Taper
⑭ Cylinder Comp Front Fork
⑮ Inner Tube
⑯ Sub Spring
⑰ Oil seal
⑱ Outer Tube









FRONT FORK REMOVAL

⚠WARNING

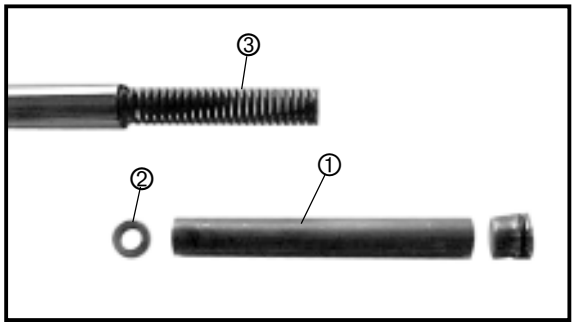
Securely support the Motorcycle so there is no danger of it falling over

1. Stand the Motorcycle on a level surface
2. Elevate the Front Wheel by placing a suitable stand under the Engine

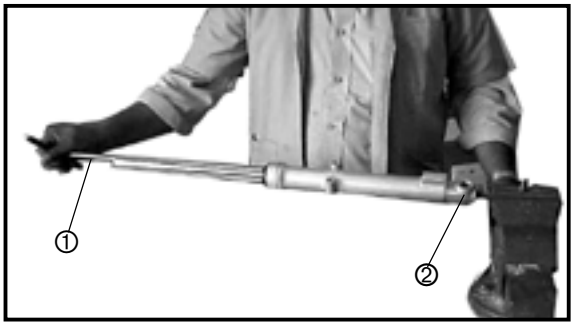
3. Remove :
   - Front Wheel
   - Front Fender
     Refer to “FRONT WHEEL REMOVAL” Section Page no 6-3
   - Handlebar
     Refer to “HANDLEBAR REMOVAL” Section Page no 6-30
4. Remove
   - Rubber Cap LH/RH
   - Pinch Bolt (Inner Tube) - 2 Nos ①
   - Cap Bolt Under Bracket - 2 Nos ②

FRONT FORK DISASSEMBLY

1. Remove
   - Bolt Upper -TFF ③
2. Drain :
   - Fork Oil

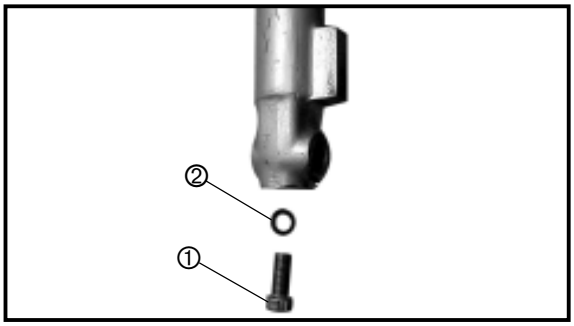


3. Remove :
   - Spacer ①
   - Seat Upper ②
   - Spring Front Fork ③

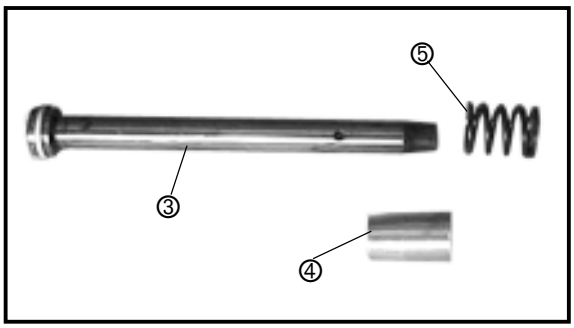


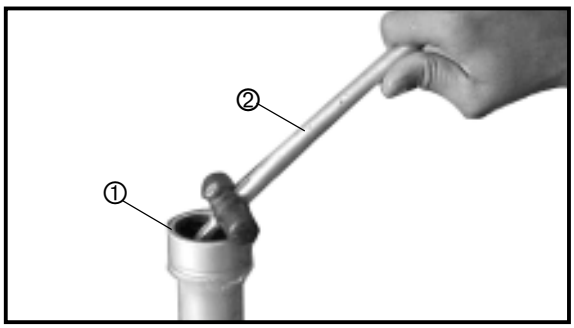
4. Loosen :
   • Bolt Allen (Damper Rod) ①
   Loosen the Bolt (Damper Rod) ① while holding the Damper Rod with T-Handle ②

	T-Handle **YSST - 213**



5. Remove :
   • Bolt (Damper Rod) ①
   • Washer ②
   • Cylinder complete Fornt Fork ③
   • Spindle Taper ④
   • Spring Sub ⑤



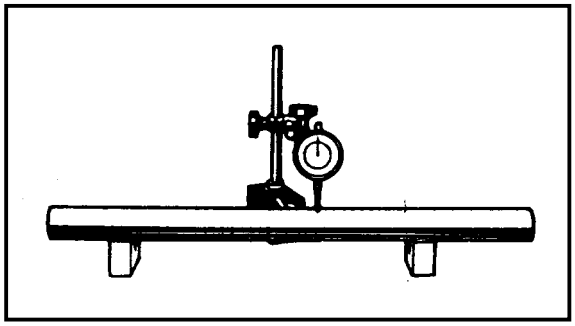


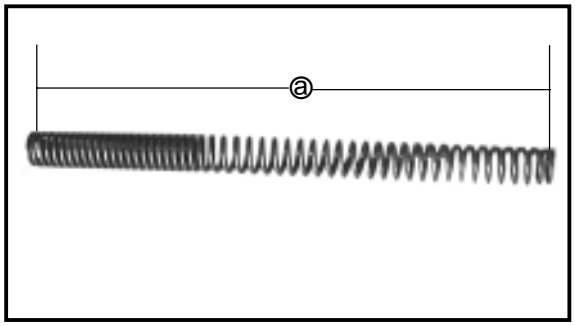
6. Remove :
   • Ring snap
   • Washer
   • Oil Seal ① using Oil Seal Remover ②

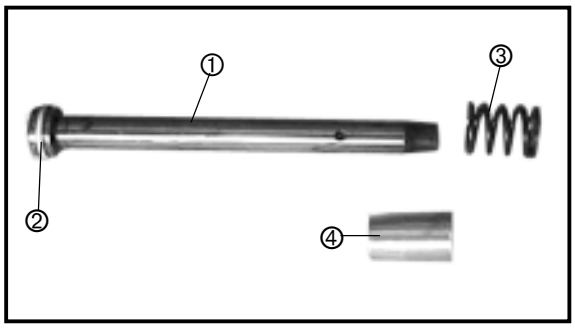
	Oil Seal Remover **YSST - 275**

CAUTION:

Never reuse the Oil Seal







FRONT FORK INSPECTION

1. Inspect :
   • Inner Tube bending

Inner Tube bending limit :
0.2 mm

Scratches/bends/damage ➔ Replace

⚠WARNING

Do not attempt to straighten a bent Inner Tube as this may dangerously weaken the Tube

2. Measure :
   • Fork Spring length ⓐ

Front Fork Spring free length :
316.9 mm
<Wear limit>
311.9

Over the specified limit ➔ Replace

3. Inspect :
   • Cylinder Complete Front Fork ①
   • Piston Ring ②
   Wear/cracks/damage ➔ Replace
   • Spring Sub ③
   • Spindle Taper ④
   Bends/damage ➔ Replace
   Contamination ➔ Blow out all Oil Passages with Compressed Air

CAUTION:

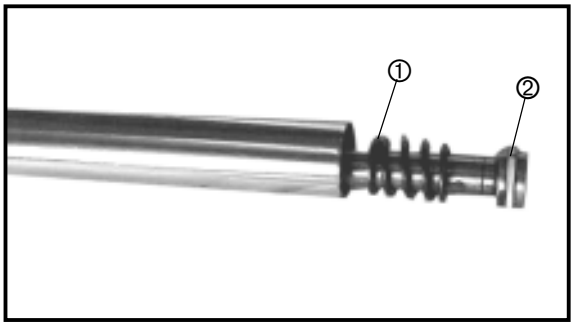
• When disassembling and assembling the Front Fork do not allow any foreign material to enter the Oil

FRONT FORK ASSEMBLY

Reverse the “DISASSEMBLY” procedure
Note the following points

NOTE :

- When assembling the Front Fork be sure to replace the following parts
- Oil Seal
- Seal Dust
- Snap Ring
- Before assembling the Fork, make sure that all the components are clean.



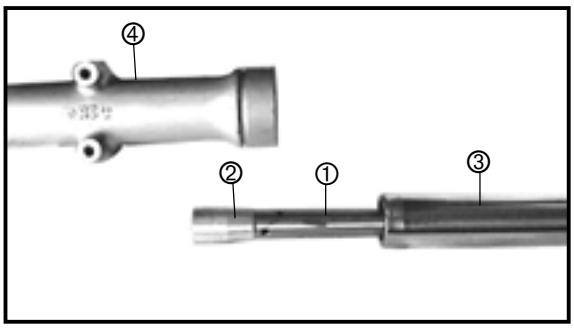
1. Install :
   - Spring Sub ①
   - Cylinder Complete ②

⚠WARNING

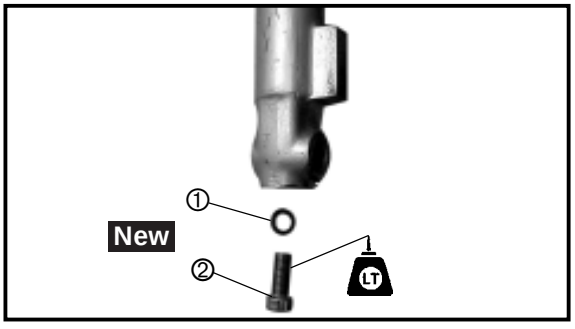
Allow the Cylinder Complete to slide slowly down the Inner Fork Tube until it protrudes from the bottom, being careful not to damage the Inner Fork Tube

2. Lubricate :
   - Inner Tube (outer surface)

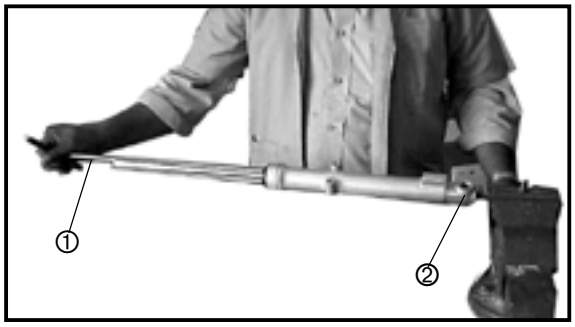
Recommended lubricant :
Fork Oil 10 W or equivalent



3. Install :
   - Cylinder Complete ①
   - Spindle Taper ②
   - Inner Tube ③
   - Outer Tube ④

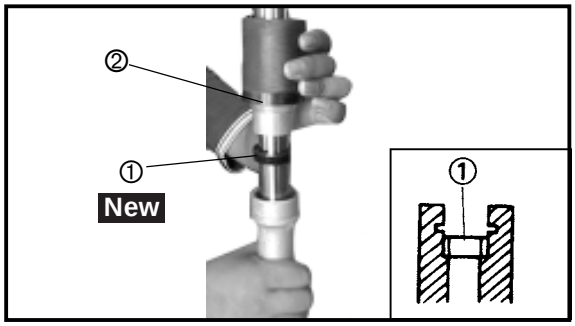


4. Install :
   - Washer ① New
   - Bolt (Damper Rod) ②



5. Tighten :
   • Bolt (Cylinder Complete) ① holding the Cylinder Complete with a T-Handle ②

	Bolt (Cylinder Complete) : 23 Nm (2.3 m.kg, 17 ft.lb)
	T-Handle YSST - 213

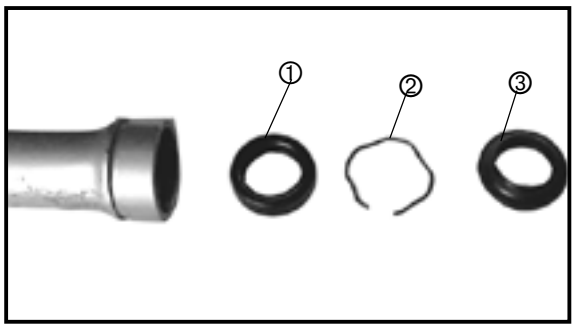


6. Install :
   • Oil Seal ① **New** Using TFF Oil Seal Installation Tool ②

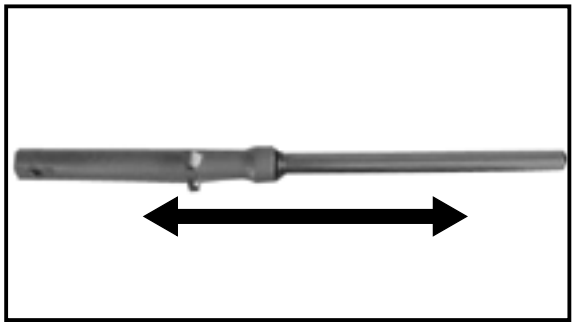
	TFF Oil Seal Installation Tool YSST - 275

NOTE :
- Before installing the Oil Seal ① apply lithium soap base grease onto the Oil Seal lips.
- Adjust the Ring Snap so that it fits into the Outer Tube Groove

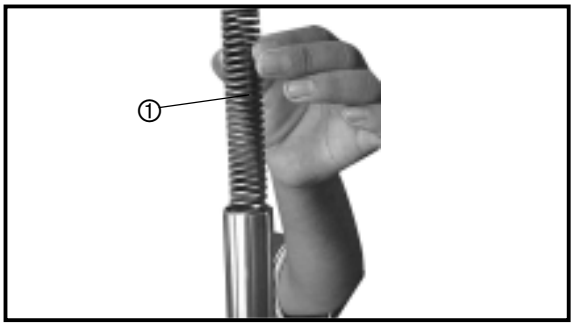
CAUTION:
Make sure that the Oil Seal numbered side faces upward



7. Install :
   • Washer ①
   • Ring Snap ②
   • Dust Seal ③



8. Inspect :
   • Inner Tube operation
   Unsmooth operation ➔ Disassembly and recheck



9. Fill :
   • Fork Oil ①

Oil Quantity :
Overhauling - 151 ± 3 ml
Refilling - 139 ± 3 ml
Recommended Oil :
Teleshocab Oil

10. After filling up, slowly Pump the Fork up and down to distribute the Fork Oil

11. Install :
   • Front Fork Spring ①
   • Seat Upper
   • Spacer

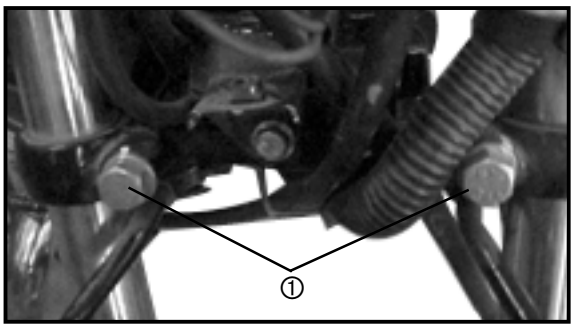
12. Install :
   • Cap Bolt Temporarily to avoid oil drain.

NOTE :
• Install the Fork Spring with its smaller Pitch upward.
• Before installing the Cap Bolt, apply grease to the O-Ring.

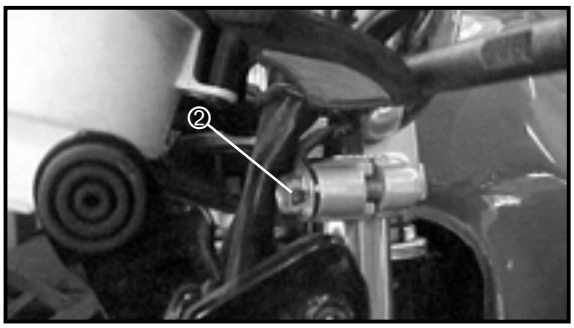
FRONT FORK INSTALLATION

Reverse the “REMOVAL PROCEDURE”
Note the following points

1. Install
   • Front Fork
   • Temporarily tighten Pinch Bolt (Underbracket) ①



NOTE:
Pull up the inner to until its end flushes with the top of the Handle Crown then temporarily tighten the bolts (underbracket)

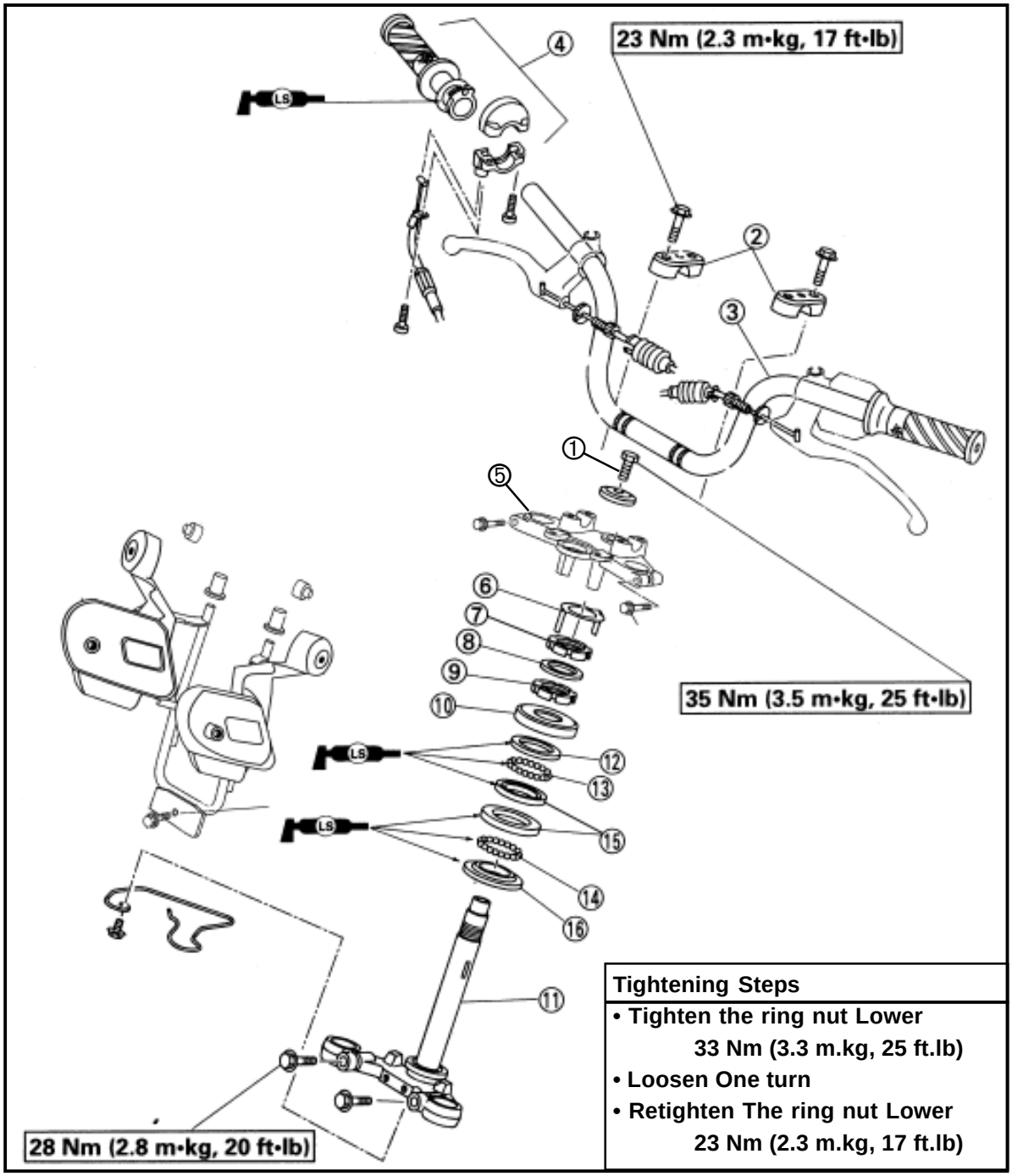


2. Tighten
   • Pinch Bolts (underbracket) ①
   • Cap Bolts ②

Pinch Bolt (Underbracket) :
28Nm (2.8 m.kg, 20 ft.lb)
Bolt (Cap Bolt) :
23Nm (2.3 m.kg, 17 ft.lb)

STEERING HEAD AND HANDLEBAR

① Bolt Steering
② Holder Handle bar Upper
③ Handlebar
④ Grip Assembly (right)
⑤ Handle Crown
⑥ Lock Washer
⑦ Ring Nut (upper)
⑧ Damper Rubber
⑨ Ring Nut (lower)
⑩ Ball Race Cover
⑪ Under Bracket
⑫ Ball Race (upper)
⑬ Ball (upper)
⑭ Ball (lower)
⑮ Ball Race (center)
⑯ Ball Race (lower)

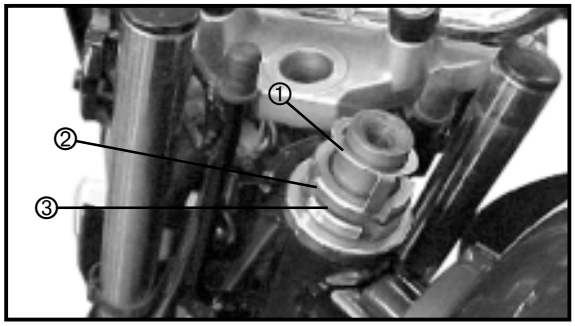


REMOVAL

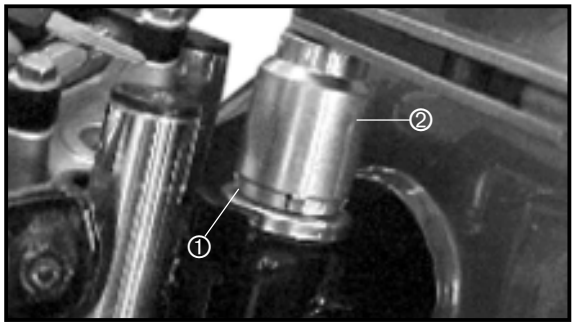
⚠WARNING

Securely support the motorcycle so that there is no danger of it falling over
Stand the motorcycle on a level surface

1. Remove :
   - Band ①
   - Brake Cable (front) ②
   - Clutch Cable ③
   - Speedometer Cable
2. Remove :
   - Starter wire ①
   - Switch Handle ②
3. Remove :
   - Bolts (4 Nos) ①
   - Handlebar Upper Holder ②
   - Handlebar ③
   - Throttle Grip
   - Lever Holder (Front Brake)
4. Remove :
   - Front Wheel
     Refer to “FRONT WHEEL” Section, Page No 6-4
   - Front Fender
   - Front Fork
     Refer to “FRONT FORK” Section, Page no 6-21
5. Remove :
   - Fuel Tank
     Refer to “SIDE COVERS, SEAT, FUEL TANK” section in Chapter 3, page no 3-3
6. Remove :
   - Headlight Assembly ①
   - Bolt Steering
   - Bolt Cap (Upper Bracket) - 2 Nos.
   - Upper Bracket



7. Remove :
   Lock Washer ①
   Ring Nut (upper) ②
   Damper Rubber ③

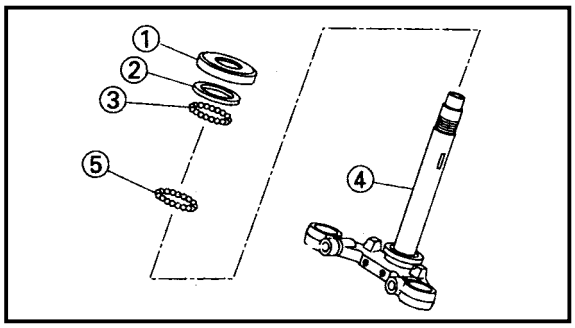


8. Remove :
   • Ring Nut (lower) ①
     Use a Ring Nut Wrench ②

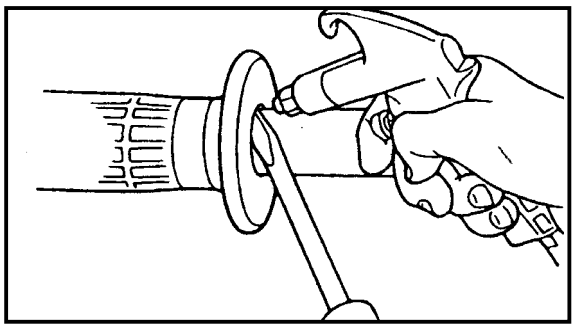
	Ring Nut Wrench : **YSST - 621**

⚠WARNING

Securely support the Steering Shaft so that there is no danger of it falling down



9. Remove :
   • Bearing Cover ①
   • Bearing Race ②
   • Rack Balls (upper) ③
   • Lower Bracket ④
   • Rack Balls (lower) ⑤



HANDLEBAR REMOVAL

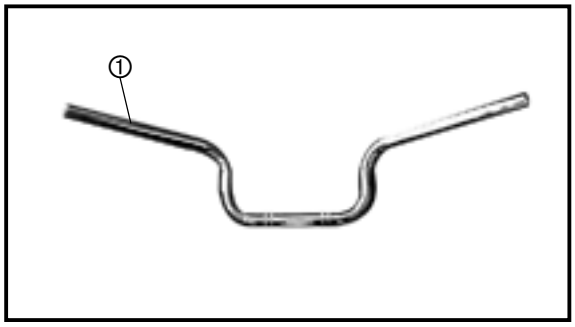
1. Remove :
   • Grip (left)

****

Removal Steps :

• Blow with compressed air between the Handlebar and Adhesive side of the Grip to remove

****

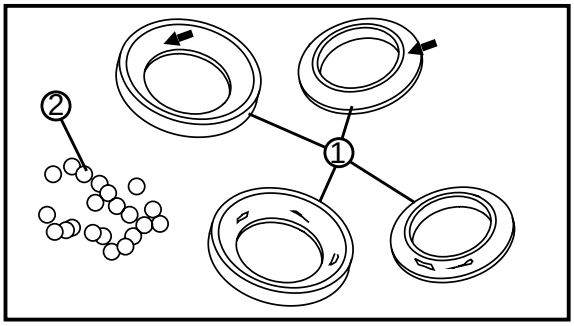


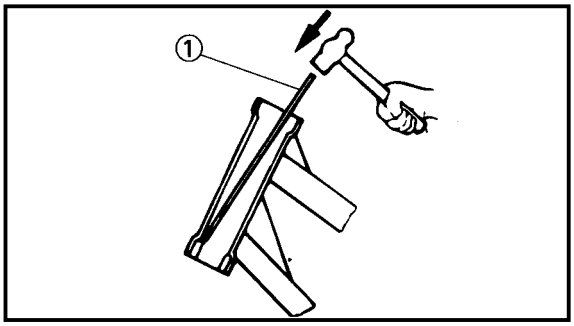
HANDLEBAR INSPECTION

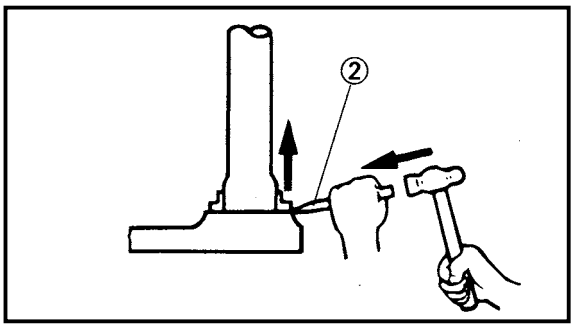
1. Inspect :
   • Handlebar ①
   Bends/Cracks/damage ➔ Replace

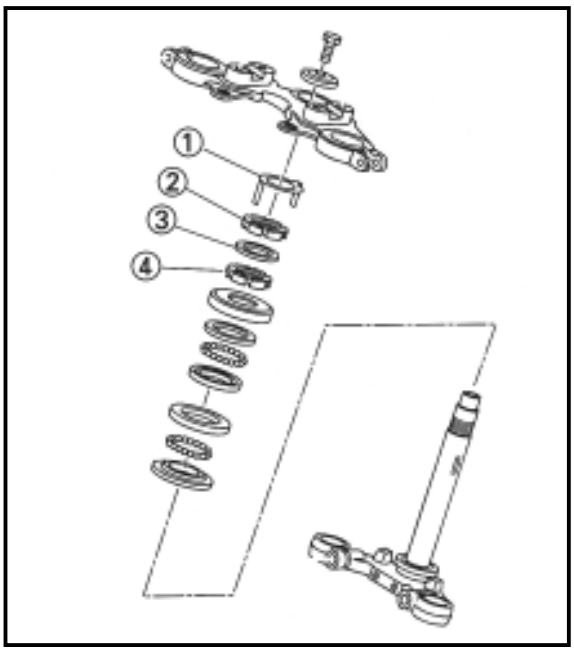
⚠WARNING

Do not attempt to straighten a bent Handlebar as this may dangerously weaken the Handlebar









STEERING INSPECTION

1. Wash the Bearing and Ball Races with a solvent
2. Inspect :
   - Bearing Races ①
   - Ball Cage Bearing ②

   Pitting/Damage ➔ Replace

****

Bearing Race replacement steps :

- Remove the Ball Races on the Head Pipe using Long Rod ① and the hammer as shown
- Remove the Ball Race on the Under Bracket using the floor chisel ② and the hammer as shown
- Install the new Dust Seal and Races

****

NOTE :

Always replace Bearing races as a set.

CAUTION:

If Bearing Race is not fitted squarely, the Head Pipe could be damaged.

STEERING INSTALLATION

Reverse the “REMOVAL”procedure

Note the following points

1. Lubricate
   - Balls (upper and lower)
   - Ball Races

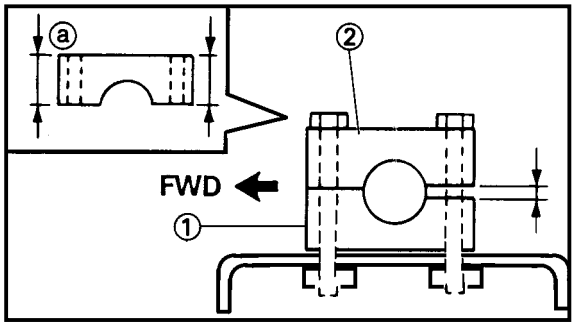
	Recommended lubricant **Lithium - soap base grease**

2. Install :
   - Ring Nut (lower) ①
   - Damper Rubber ②
   - Ring Nut (upper) ③
   - Lock Washer ④

   Refer to “STEERING HEAD INSPECTION” section in Chapter 3, Page no 3-22
3. Install :
   - Bush
   - Meter Assembly with Handle Crown

	Ring Nut: **23 Nm (2.3 m.kg, 17 ft.lb)**

4. Install :
   • Front Fork
   Refer to “FRONT FORK” Section, Page no 6-27
   • Front Fender
   • Front Wheel
   Refer to “FRONT WHEEL” Section, Page no 6-8

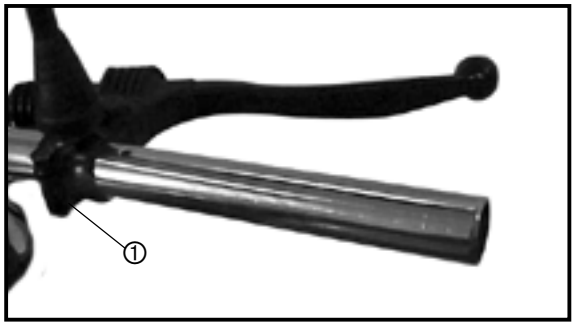


HANDLEBAR INSTALLATION

1. Install :
   • Holder Handelbar Lower ①
   • Handlebar ①
   • Upper Handlebar Holder ②

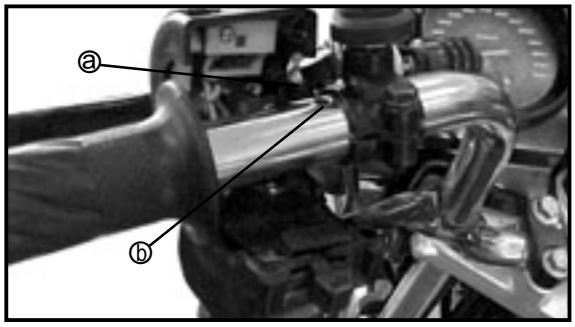
	Bolt (Handlebar Upper Holder): 7.5 ~ 12 Nm (2.3 m.kg, 17 ft.lb)

NOTE :
- Apply a light coat of lithium soap base grease onto the Handlebar right end
- The Upper Handlebar Holders should be installed with the longer side ç to the forward, then tighten the Front Bolt as shown



2. Install :
   • Front Brake Lever Assembly ①
   • Handlebar Switch (left)
   • Grip Assembly
   • Throttle Cable
   • Housing (Throttle Grip)

NOTE :
Align the projection ⓐ on the Handlebar Switch with the Hole ⓑ in the Handlebar.



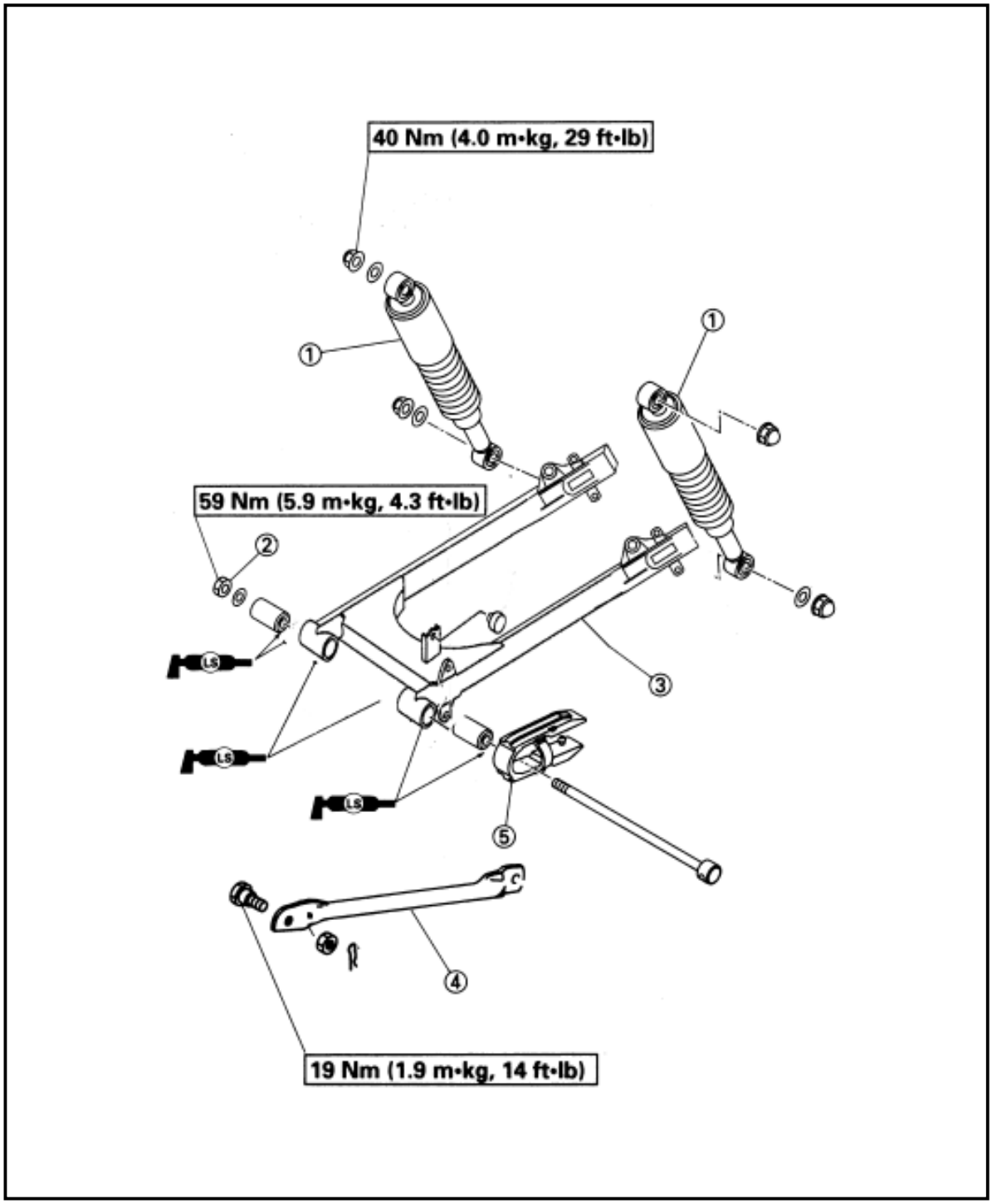
⚠WARNING

Check the throttle grip for smooth operation

3. Adjust :
   • Throttle Cable free play
   • Brake operation
   Refer to “THROTTLE CABLE ADJUSTMENT / BRAKE LEVER ADJUSTMENT” section in Chapter 3, Page no 3-9 and 3-18

REAR SHOCK ABSORBER AND SWINGARM

① Rear Shock Absorber
② Axle Nut
③ Swing arm
④ Tension Bar
⑤ Seal Guard



REMOVAL

1. Stand the Motorcycle on a level surface.

⚠WARNING

Securely support the Motorcycle on a level surface

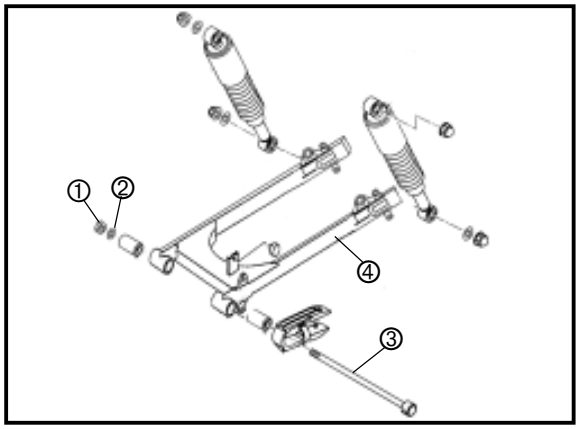
2. Remove :
   - Side Covers (left and right)
   - Seat
   - Cover Chaincase
   - Chain Case (upper and lower)

   Refer to “SIDE COVERS, SEAT, AND FUEL TANK ” section in Chapter 3, Page no 3-3

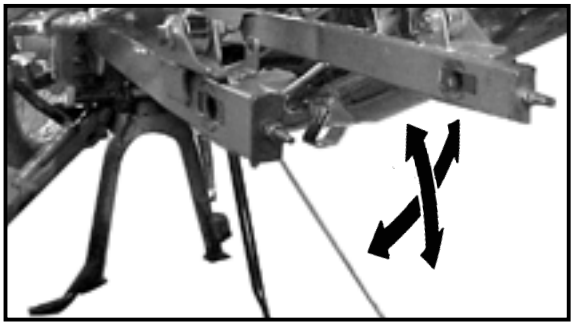
3. Remove :
   - Rear Wheel
   - Driven Sprocket Assembly

   Refer to “DRIVE CHAIN AND SPROCKETS” section, Page no 6-16

4. Remove :
   - Nut Rear Shocker (upper and lower)
   - Rear Shock Absorber (left and right)

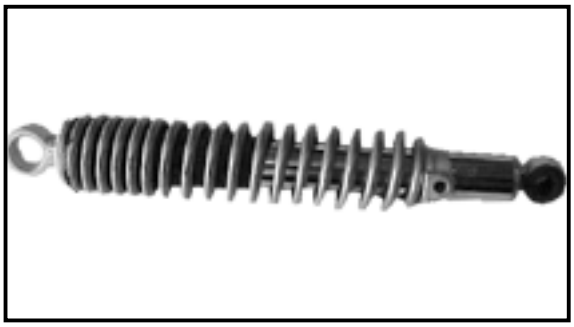


5. Remove :
   - Nut Footrest L.H./R.H.
   - Axle Nut (Swing Arm) ①
   - Washer ②
   - Axle Shaft ③
   - Foot Rest LH/RH
   - Swing Arm ④



INSPECTION

1. Inspect :
   - Swingarm looseness
     Looseness exists ➔ Tighten the Pivot Shaft nut or replace Bushes
   - Swingarm up and down movement
     Unsmooth movement/bending/rough spots ➔ Replace Bushes



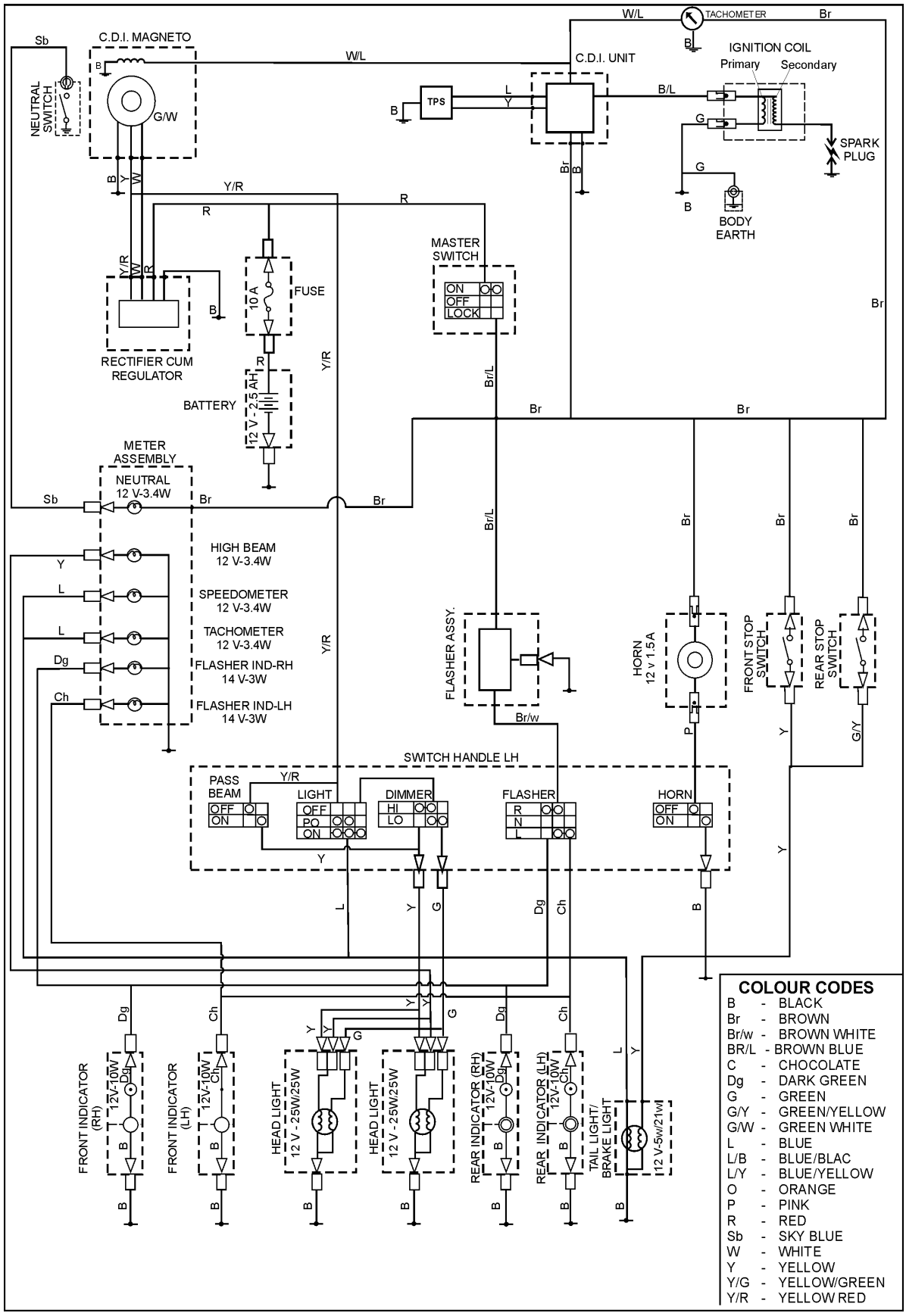
2. Inspect :
   - Rear Shock Absorber
     Oil leaks/damage ➔ Replace the Rear Shock Absorber Element

CHAPTER 7

ELECTRICAL

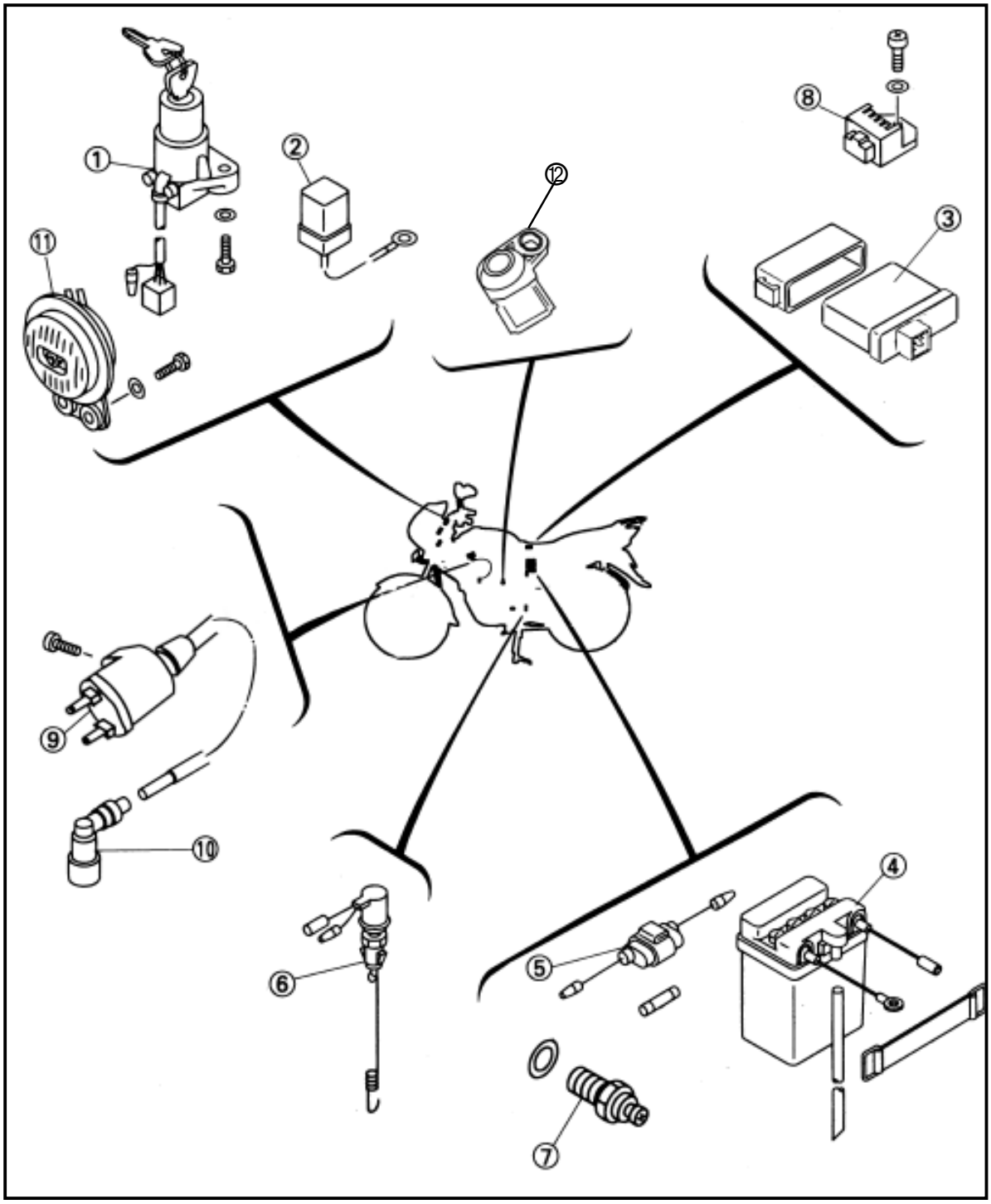
CIRCUIT DIAGRAM 7-1
LOCATION OF ELECTRICAL COMPONENTS 7-2
CHECKING OF CONNECTIONS 7-3
IGNITION SYSTEM/CHARGING SYSTEM
CIRCUIT DIAGRAM 7-4
TROUBLESHOOTING 7-4
CHARGING SYSTEM
TROUBLESHOOTING 7-9
LIGHTING SYSTEM
CIRCUIT DIAGRAM 7-10
TROUBLESHOOTING 7-10
LIGHTING SYSTEM CHECK 7-12
SIGNAL SYSTEM
CIRCUIT DIAGRAM 7-14
TROUBLESHOOTING 7-14
SIGNAL SYSTEM CHECK 7-16

CIRCUIT DIAGRAM

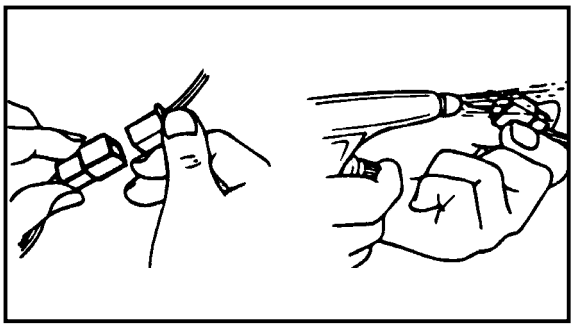


LOCATION OF ELECTRICAL COMPONENTS

① Main Switch
② Flasher Relay Assy
③ C.D.I. Unit Assy
④ Battery
⑤ Fuse
⑥ Stop Switch Rear
⑦ Neutral Switch Assy
⑧ Rectifier / Regulator Assy
⑨ Ignition Coil Assy
⑩ Spark Plug Cap
⑪ Horn
⑫ Throttle Position Sensor (TPS)

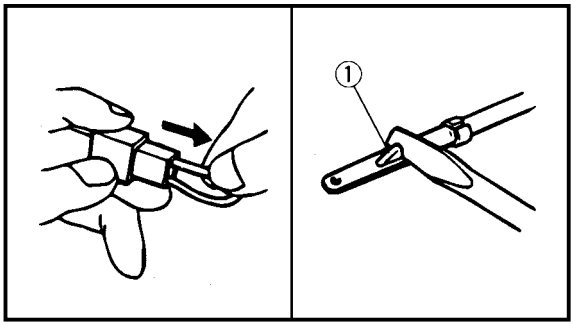


CHECKING OF CONNECTIONS

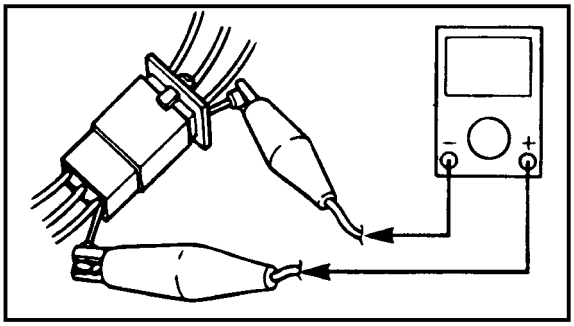


Dealing with wire pressed stains, rust, moisture etc. on the connector.

1. Disconnect
   • Connector ①
2. Dry each terminal with an air blower
3. Connect and disconnect the Connector two or three times.
4. Pull the lead to check that it will not come off.



5. If the terminal comes off, bend up the pin ① and reinsert the terminal in to the connector.



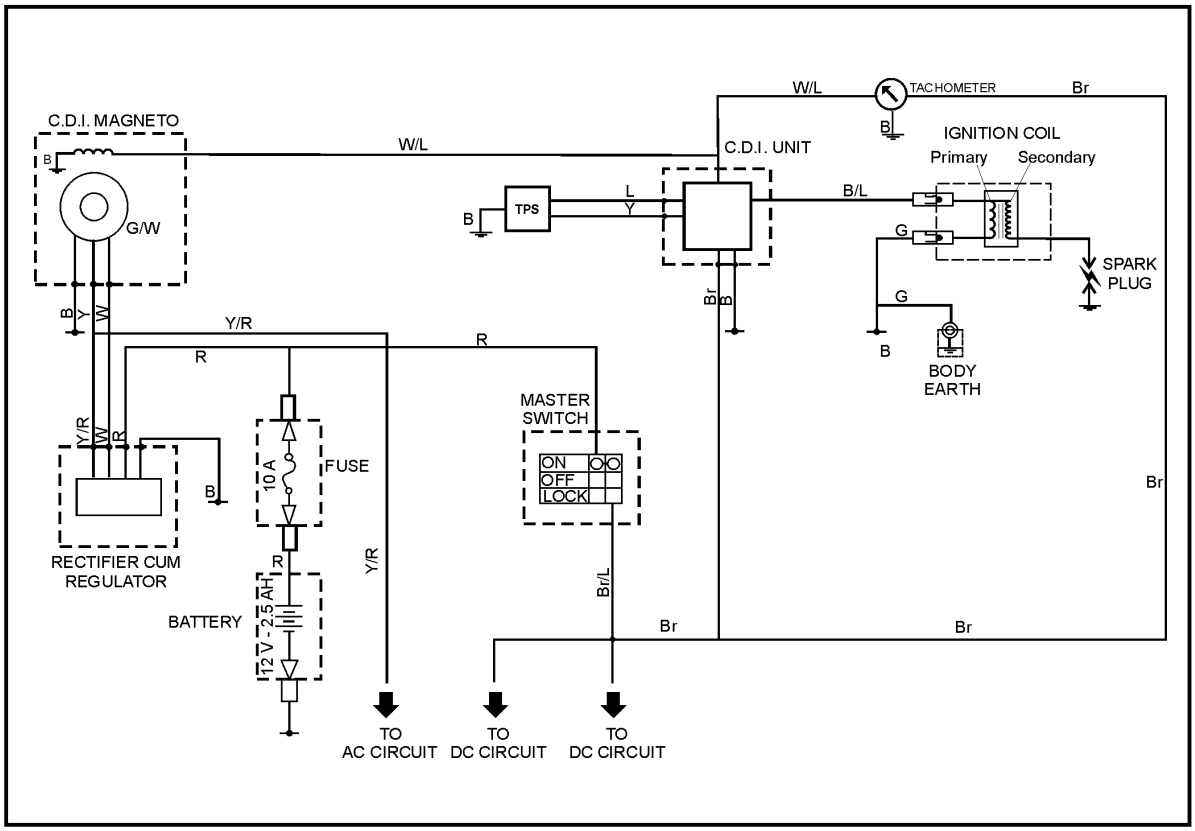
6. Check for continuity with a tester.

NOTE:

- If there is no Continuity, Check/Clean the terminals
- Be sure to check the steps 1 to 6 listed above when checking the wire harness.
- Use the tester on the connector as shown.

IGNITION SYSTEM, CHARGING SYSTEM AND TACHOMETER SYSTEM

CIRCUIT DIAGRAM



TROUBLE SHOOTING

IF THE IGNITION SYSTEM FAILS TO OPERATE.
(NO SPARK OR INTERMITTENT SPARK)

PROCEDURE

CHECK

1. Spark Plug
2. Spark Plug Cap resistance
3. Ignition coil
4. Main switch
5. Sensor coil resistance
6. Charging Coil resistance
7. Rectifier cum Regulator Unit
8. Wiring connections (entire ignition system)
9. CDI
10. Tachometer Circuit

Note :

Remove the required parts before trouble shooting.

1) Side covers (LH and RH)
2) Seat
3) Fuel Tank

• Use Service Instrument as specified.

Digital Multimeter

NOTE :

For Checking Coil resistance, set Multimeter a step higher than specified range.

PROCEDURE STEPS

1. SPARK PLUG

- Check the spark plug condition
- Check the Spark Plug type
- Check the Spark Plug gap
- Refer to "SPARK PLUG INSPECTION" section in Chapter 3, Page 3-10

Standard Spark Plug
CR7HSA - NGK

Spark Plug Gap : 0.6~0.7 mm

OUT OF SPECIFICATION

Adjust or replace the Spark Plug

2. SPARK PLUG CAP RESISTANCE

- Remove the Spark Plug Cap
- Connect the Multimeter (ΩX1k) to the Spark Plug Cap.

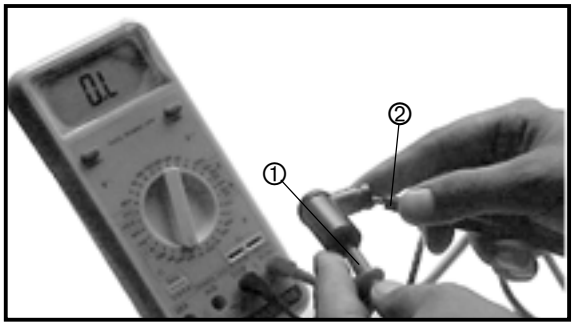
NOTE:

- When removing the Spark Plug Cap, turn out the Spark Plug Cap from high tension Cord.

Remove ➔ Turn anticlockwise
Connect ➔ Turn clockwise

- When connecting the Spark Plug Cap, cut the High Tension Cord about 5 mm.

Multimeter (+) lead ➔ Spark Plug side ①
Multimeter (-) lead ➔ High tension Cord side ②



Spark Plug Cap resistance :
5 KΩ (at 20°C)

OUT OF SPECIFICATION

Replace the Spark Plug Cap

* MEETS SPECIFICATION

*

3A. IGNITION COIL RESISTANCE (Primary)

- Disconnect the Ignition Coil Connector From the Wire harness
- Connect the Multimeter to the Ignition Coil.
- Check the primary Coil resistance

Primary coil resistance :
0.22 Ω ± 15 %

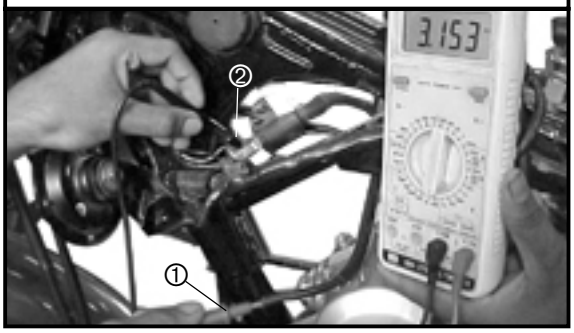
Multimeter (+) lead ➔ Black/Blue Terminal ①
Multimeter (-) lead ➔ Green Terminal ②

3B. IGNITION COIL RESISTANCE (Secondary)

- Connect the Multimeter to the Ignition Coil
- Check the secondary coil resistance

Secondary coil resistance :
3.0 kΩ ± 20% (at 20 ° C)

Multimeter (+) lead ➔ High Tension lead ①
Multimeter (-) lead ➔ Green Terminal ②



OUT OF SPECIFICATION

BOTH MEET SPECIFICATIONS

Ignition Coil OK

Replace the Ignition Coil

4. MAIN SWITCH

- Check for Continuity of Switch ON position

Multimeter (+)	R
Multimeter (-)	BR/L

- Check for ignition “ON” “OFF” position

NO CONTINUITY

Replace the Main Switch

CONTINUITY

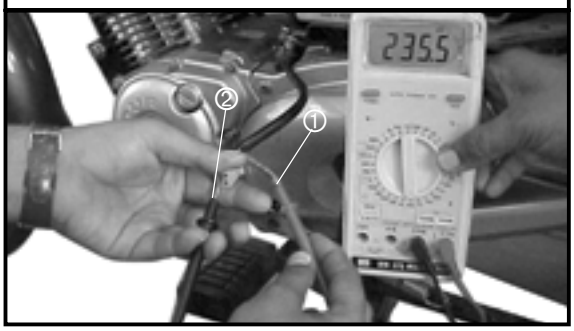
Main Switch OK

5. SENSOR COIL RESISTANCE

- Disconnect the sensor Coil Coupler from the Wiring Harness
- Connect the Multimeter (Ω X 100) to the sensor coil coupler
- Check the sensor coil resistance

Sensor coil resistance :
240 Ω ± 20 % (at 20ºC)

Mutimeter (+) lead →White/Blue terminal ①
Multimeter (-) lead → Earth ②



OUT OF SPECIFICATION

MEETS SPECIFICATION

Sensor coil is OK

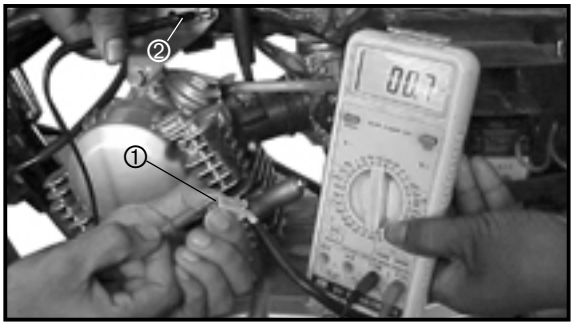
Replace the Sensor Coil Assembly

6. CHARGING COIL RESISTANCE

- Remove the Charging Coil coupler from the Wire Harness
- Connect the Multimeter to the charging coil
- Measure the charging coil resistance

Charging coil resistance
0.75 Ω ± 20 % (at 20ºC)

Multimeter (+) lead → White Terminal ①
Multimeter (-) lead → Black Terminal ②



OUT OF SPECIFICATION

MEETS SPECIFICATIONS

Charging coil is OK

Replace the Charging CoiL

*

*

7. RECTIFIER CUM REGULATOR UNIT

• Check the Charging Voltage

Procedure Steps

• Connect the Tachometer to Spark plug lead

• Connect the Multimeter (DC 20V) to Battery Red Wire.

Measure the Battery Voltage : 12V

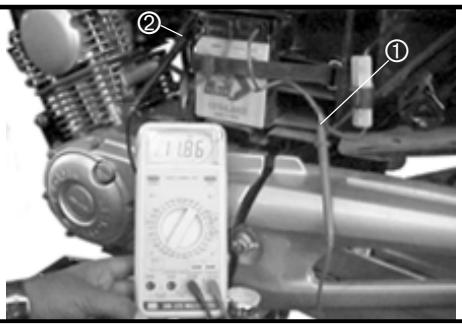
If less than specifications, charge the Battery

• Start the engine and accelearte the Engine up to 5000 RPM .

• Check the Charging voltage :

Charging voltage :
14 ~ 15 V at 5000RPM

Multimeter (+) lead ➔ Battery (+) terminal ①
Multimeter (-) lead ➔ Battery (-) terminal ②



MEETS SPECIFICATIONS

OUT OF SPECIFICATION

Rectifier cum Regulator unit is faulty.
• Replace RR unit

Charging Circuit and Rectifier cum Regulator are OK

8. WIRING CONNECTIONS

• Check the connection for entire Ignition and Charging System “REFER TO CIRCUIT DIAGRAM” Page 7-4

POOR CONNECTIONS

IF CORRECT

Repair/ Replace the Harness

9. CDI Unit

• Check CDI unit “REFER IGNITION TIMING PROCEDURE Chapter 3, Page 3.11

IF NOT WORKING

10. TACHOMETER

• Check Tachometer Operation and entire connection

Replace Tachometer

TROUBLE SHOOTING

IF THE BATTERY IS NOT CHARGED

PROCEDURE

CHECK

1. Fuse
2. Battery
3. Charging voltage
4. Charging coil resistance
5. Wiring system (entire charging system)

Note :

Remove the following parts before trouble shooting.

1) Side covers (LH)

• Use Service Instruments as specified.

Engine Tachometer.
Digital Multimeter

1. FUSE

Refer to “FUSE INSPECTION SECTION” in Chapter 3, Page no 3-30

NO CONTINUITY → Replace the Fuse

CONTINUITY ↓

2. BATTERY

• Check the Battery condition.
Refer to “BATTERY INSPECTION” section in Chapter 3, Page no 3-28

Specific Gravity : 1.230 ± 0.005 at 20ºC

INCORRECT →
• Top up with distilled water
• Clean the Battery terminals
• Recharge or Replace the Battery

CORRECT ↓

3. CHARGING VOLTAGE

• Refer to Rectifier cum Regulator unit inspection method in the Ignition System section in this Chapter, Page no 7-8

MEETS SPECIFICATIONS →
The Charging circuit is OK

OUT OF SPECIFICATION ↓

4. CHARGING COIL RESISTANCE.

• Refer to Charging coil resistance checking method in the Ignition System section in this Chapter, Page no 7-7

OUT OF SPECIFICATION →
Replace the Charging Coil

MEETS SPECIFICATION ↓

5. WIRING CONNECTION

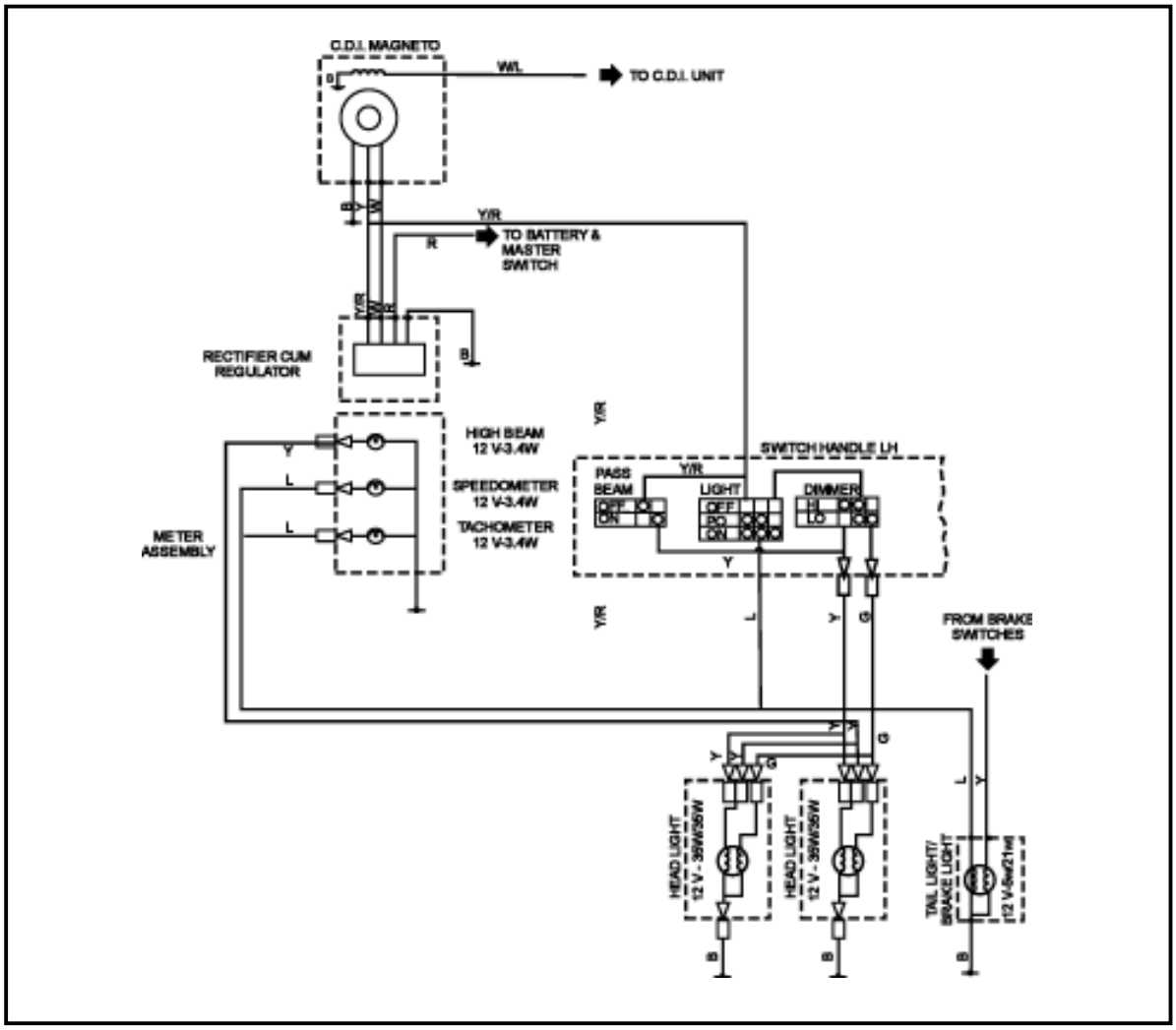
• Check entire Charging system for poor connections.

Refer to circuit diagram Section Page no 7-4

POOR CONNECTIONS →
Repair or Replace the Wiring Harness

LIGHTING SYSTEM

CIRCUIT DIAGRAM : AC



TROUBLE SHOOTING

IF THE HEAD LIGHT, HI BEAM INDICATOR LIGHT, TAILLIGHT AND METER LIGHT DO NOT WORK

PROCEDURE

CHECK

1. Lighting Coil resistance
2. Light Switch
3. Dimmer Switch
4. Lighting Voltage
5. Wiring connections (entire lighting system)
6. Check individual lighting circuits

Note :

Remove the following parts before trouble shooting.

1) Side covers (LH and RH)
2) Seat
3) Headlight Assembly
4) Battery
5) Battery Box

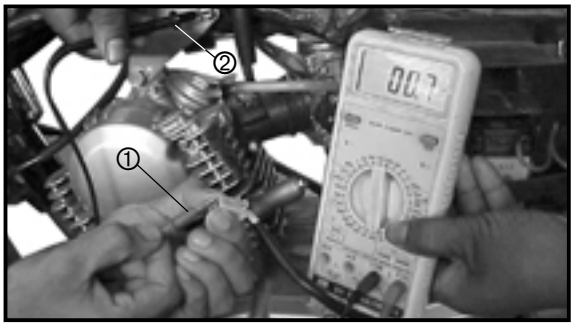
Engine Tachometer.
Digital Multimeter

1. LIGHTING COIL RESISTANCE

- Remove the C.D.I. Magento Coupler from the wiring Harness
- Connect the Multimeter (Ω X 1) to the Lighting Coil
- Measure the Lighting Coil resistance

Lighting Coil resistance
0.62 Ω ± 20 % at 20ºC

Multimeter (+) lead ➔ Yellow terminal ①
Multimeter (-) lead ➔ Black terminal ②



OUT OF SPECIFICATION

MEETS SPECIFICATIONS

Replace the Lighting Coil

2. LIGHT SWITCH

- Disconnect the Handlebar Switch (LH) Coupler from Wireharness
- Connect the Multimeter (Ω X 1) to Handlebar Switch (LH) Terminals
- Check the switch connections for continuity between “Blue” and “Yellow/Red”

NO CONTINUITY

CONTINUITY

Repair or Replace the Handlebar Switch LH

3. DIMMER SWITCH

- Disconnect the Handlebar Switch (LH) Coupler from wireharness.
- Connect the Multimeter (Ω X 1) to Handlebar Switch (LH) Terminals
- Check the Switch connections for continuity between “Yellow/Red and Green”, “Yellow/Red and Yellow”

NO CONTINUITY

* CONTINUITY

Repair or Replace the Handlebar Switch LH

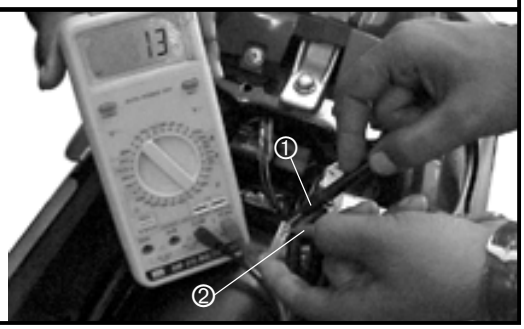
*

4. LIGHTING VOLTAGE

- Connect the Tachometer to Spark Plug lead.
- Disconnect the Taillight coupler from wire harness
- Connect the Multimeter (AC 20 V) to tail-light wire
- Start the Engine and accelerate the engine up to 5000 RPM
- Measure the lighting Voltage with (full load by switching on the Headlight)

Lighting Voltage :
(With Full Load) :
14V ±0.5 at 5000 RPM

Multimeter (+) lead ➔ Blue terminal ①
Multimeter (-) lead ➔ Black terminal ②



OUT OF SPECIFICATION

MEETS SPECIFICATION

Check the Lighting Coil resistance

5. WIRING CONNECTIONS

- Check entire lighting system for poor Connections refer to “WIRING DIAGRAM” Page

POOR CONNECTIONS

CONTINUITY

- Check the condition of individual Lighting System Circuits

- Repair or Replace wireharness

*

*

6. INDIVIDUAL LIGHTING CIRCUITS

A. If the Headlight and Highbeam Indicator Light do not work

1. BULBS AND BULB SOCKETS

- Check the Bulbs and Bulb sockets for continuity.

NO CONTINUITY → Replace Bulb and/or Bulb Socket.

CONTINUITY ↓

2. LIGHTING VOLTAGE

- Refer the lighting Voltage section Page no 7-12

B. If the meter light does not work

1. BULB AND BULB SOCKET

- Check the Bulb and Bulb Socket for continuity.

NO CONTINUITY → Replace Bulb and/or Bulb socket.

Continuity ↓

2. LIGHTING VOLTAGE

- Refer the lighting Voltage section Page no 7-12

C. If the Tail Light does not work

1. BULB AND BULB SOCKET

- Check the Bulb and Bulb Socket for continuity.

NO CONTINUITY → Replace Bulb and/or Bulb socket.

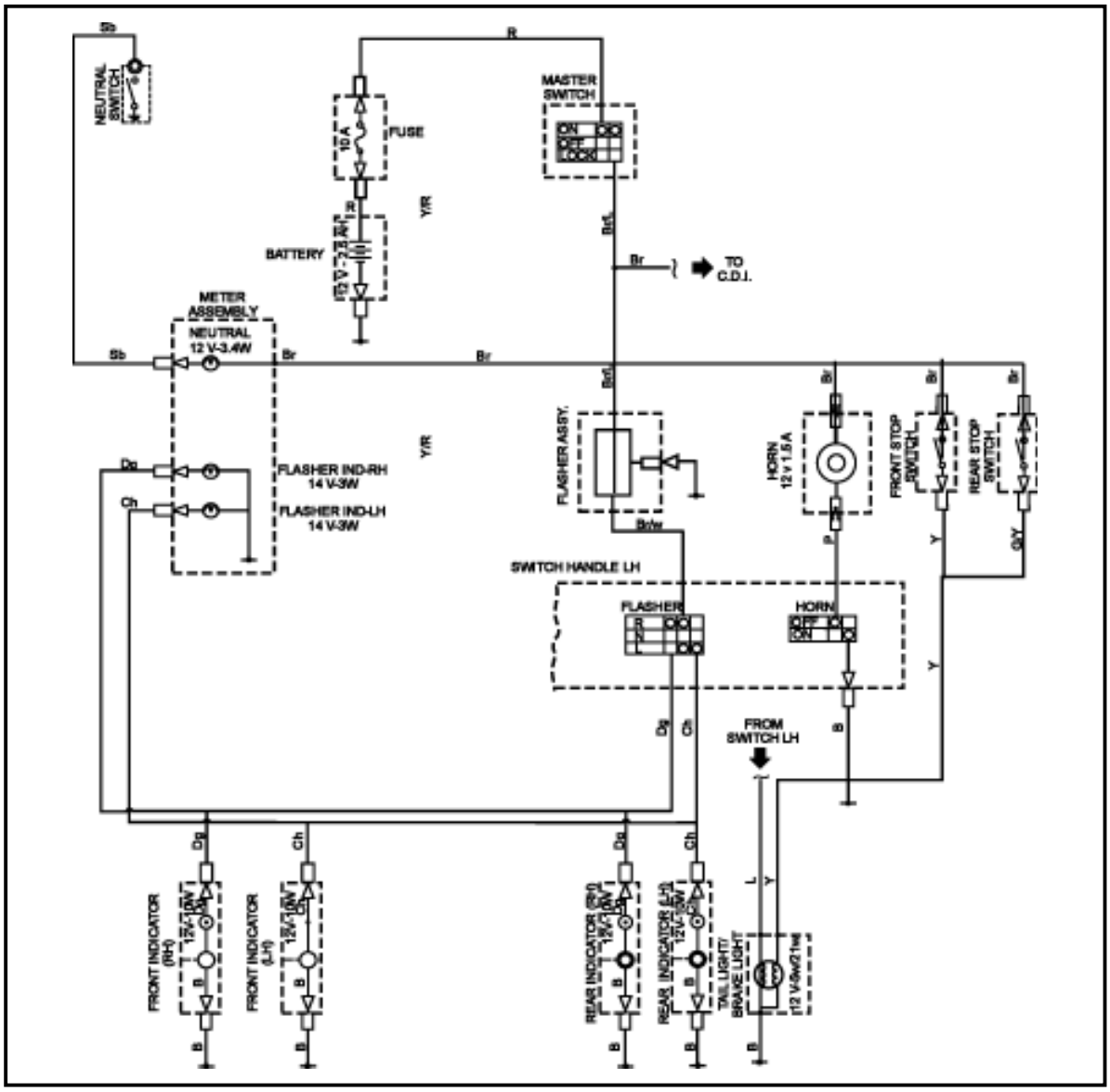
CONTINUITY ↓

2. LIGHTING VOLTAGE

- Refer the lighting Voltage section Page no 7-12

SIGNAL SYSTEM

CIRCUIT DIAGRAM : DC



TROUBLE SHOOTING

IF THE FLASHER LIGHT, BRAKE LIGHT AND INDICATOR LIGHTS DO NOT WORK
IF THE HORN DOES NOT WORK

PROCEDURE

CHECK

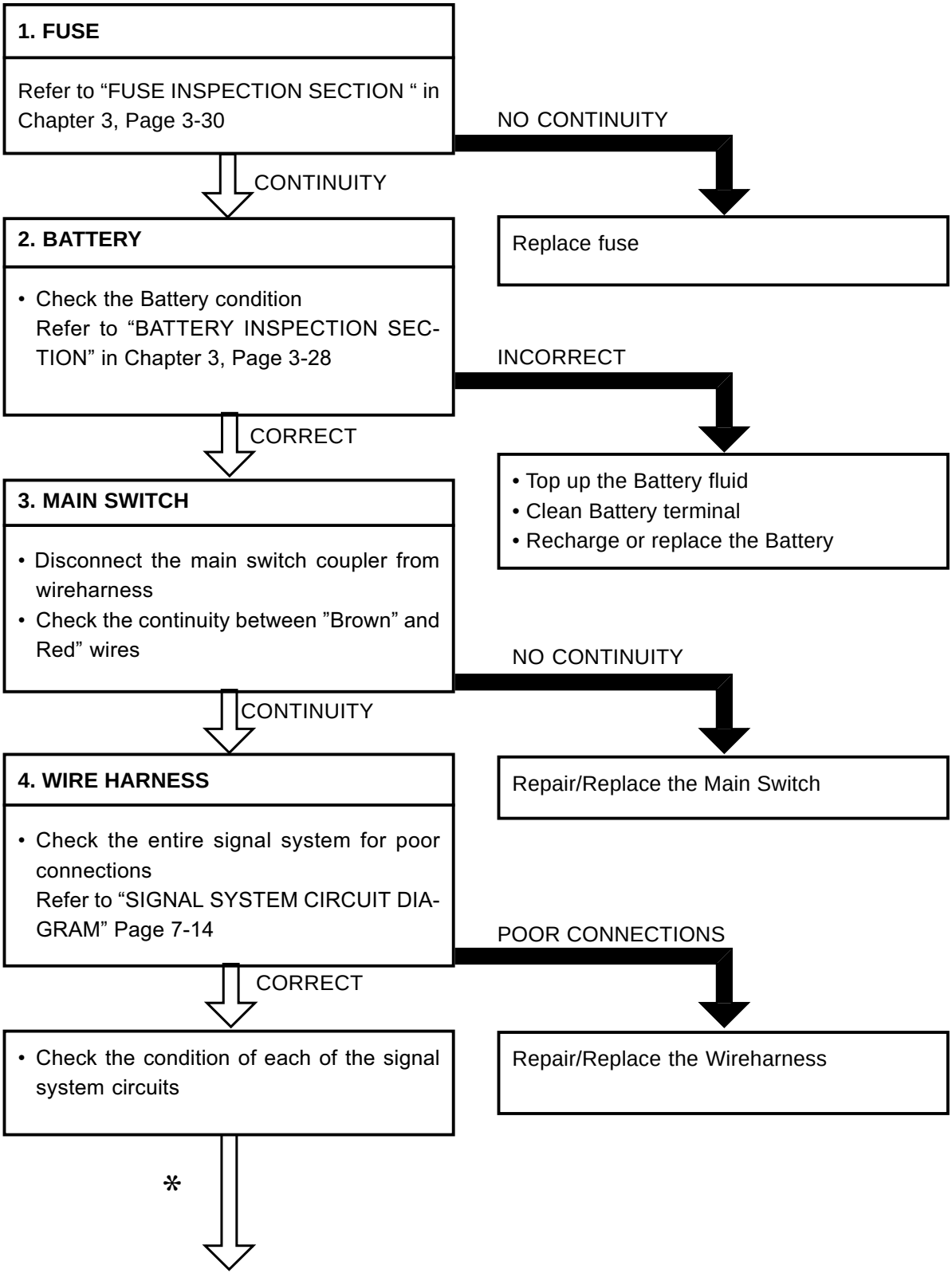
1. Fuse
2. Battery
3. Main Switch
4. Wiring connections (entire lighting system)
5. Check individual lighting circuits

Note :

Remove the following parts before trouble shooting.

1) Side covers (LH/RH)
2) Seat
3) Fuel Tank
4) Headlight

Digital Multimeter


1. FUSE
Refer to “FUSE INSPECTION SECTION “ in Chapter 3, Page 3-30
NO CONTINUITY
CONTINUITY
Replace fuse
2. BATTERY
• Check the Battery condition
Refer to “BATTERY INSPECTION SECTION” in Chapter 3, Page 3-28
INCORRECT
CORRECT
• Top up the Battery fluid
• Clean Battery terminal
• Recharge or replace the Battery
3. MAIN SWITCH
• Disconnect the main switch coupler from wireharness
• Check the continuity between ”Brown” and Red” wires
NO CONTINUITY
CONTINUITY
Repair/Replace the Main Switch
4. WIRE HARNESS
• Check the entire signal system for poor connections
Refer to “SIGNAL SYSTEM CIRCUIT DIAGRAM” Page 7-14
POOR CONNECTIONS
CORRECT
Repair/Replace the Wireharness
• Check the condition of each of the signal system circuits
*

5. INDIVIDUAL SIGNAL SYSTEMS

A. If the Horn does not work.

1. HORN SWITCH

- Disconnect the Handlebar Switch Coupler from Wireharness.
- Check the continuity between the “Pink” and “Black” with switch in Pressed Position.

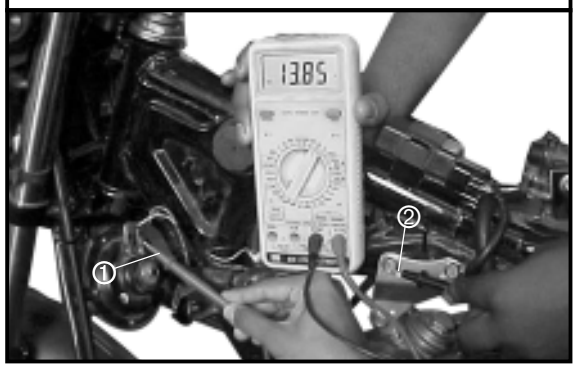
NO CONTINUITY → Replace the Switch Handle (LH)

CONTINUITY ↓

2. VOLTAGE

- Connect the Multimeter (DC20 V) to the Horn lead
- Turn the Main Switch to “ON”
- Check the Voltage (12V) between the “Brown” wire and Body Earth.

Multimeter (+) lead ➔ Brown ① Terminal
Multimeter (-) lead ➔ Body earth ②



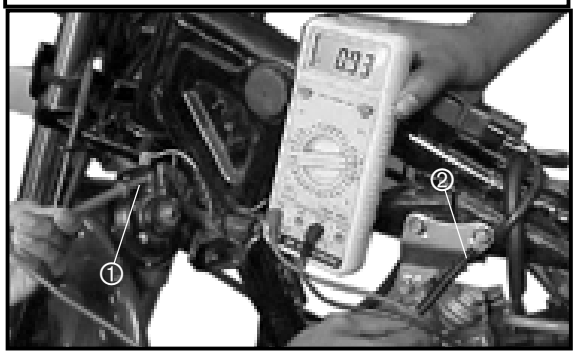
OUT OF SPECIFICATION → The wiring circuit from the Main Switch to the Horn is faulty. Repair/Replace wireharness.

MEETS SPECIFICATION ↓

3. HORN

- Disconnect the “Pink” terminal from the horn.
- Connect the multimeter (5 A) to the open terminal ① at “Horn”
- Turn the main switch “ON”
- Check current (Amperage) drawn by Horn by connecting to body earth.

Multimeter (+) lead ➔ Horn Terminal ①
Multimeter (-) lead ➔ Body earth ②



Specified current 1.5 A

OUT OF SPECIFICATION / NO SOUND → Adjust / Replace the Horn

MEETS SPECIFICATION ↓

Horn is OK

B. If the Brake Light does not work.

1. BULB AND BULB SOCKETS

- Check the Bulb and Bulb sockets for continuity.

NO CONTINUITY → Replace Bulb and/or Bulb socket.

CONTINUITY ↓

2. BRAKE SWITCH FRONT / REAR

- Disconnect the Brake switch Coupler from wire Harness.
- Check the switch front and rear for continuity between “Brown and Yellow” for front and “Brown and Green/Yellow” for Rear

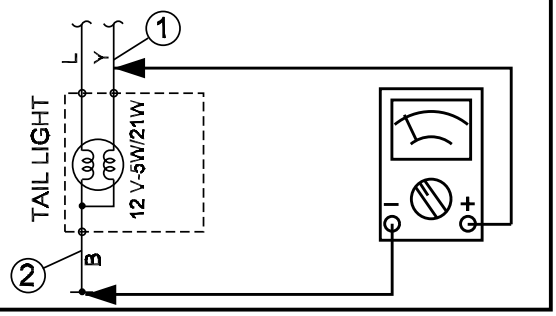
NO CONTINUITY → Replace the Brake Switch

CONTINUITY ↓

3. VOLTAGE

- Connect the Multimeter “DC20V” to bulb socket connector
- Turn the Main Switch to “ON”
- Apply the Front/Rear Brake
- Check The voltage (12V) between the “Yellow and Black terminal”

Multimeter (+) lead ➔ Yellow terminal ①
Multimeter (-) lead ➔ Black terminal ②



MEETS SPECIFICATIONS → Brake Light circuit is OK

OUT OF SPECIFICATION ↓

4. WIRING CONNECTION

Wiring circuit from Main Switch to the Bulb Sockets connector is faulty. Repair
Refer to “SIGNAL SYSTEM” wiring diagram Page no 7-14

C. If the flasher light and/or turn indicator light fails to blink.

1. BULB AND BULB SOCKET

• Check the Bulb and Bulb Socket continuity

NO CONTINUITY → Replace the Bulb and/or Bulb socket

CONTINUITY ↓

2. TURN SWITCH

- Disconnect the Handlebar Switch (left) coupler from Wireharness.
- Check the switch component for the continuity between “Brown/White and Darkgreen” and “Brown/White and Chocolate”.

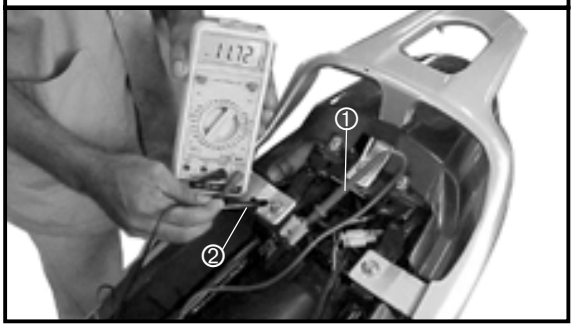
NO CONTINUITY → Replace the left Handlebar Switch.

CONTINUITY ↓

3. VOLTAGE

- Connect the Multimeter (DC20 V) to the Flasher Relay coupler.
- Turn the Main Switch to ‘ON’ .
- Check or voltage (12V) of the “Brown” ① lead at the Flasher Relay terminal and (-) terminal body earth (Black Wire).

Multimeter (+) lead ➔ Brown Terminal ①
Multimeter (-) lead ➔ Black Terminal ②



OUT OF SPECIFICATION → The wiring circuit from Main Switch to Flasher Relay connector is faulty. Repair/ Replace

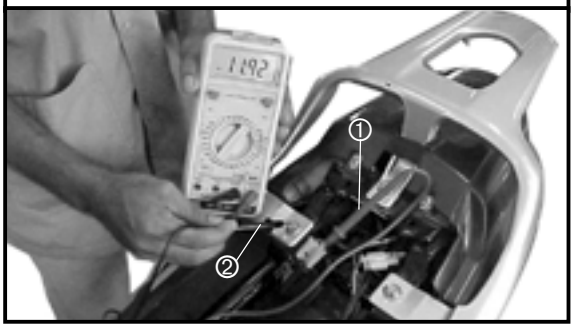
* MEETS SPECIFICATION ↓

*

4. FLASHER RELAY

- Connect the Multimeter (DC20V) to the flasher relay coupler
- Turn Main switch to 'ON'
- Check for voltage (12V) on "Brown/White" lead at Flasher Relay and (-) terminal body earth

Multimeter (+) lead ➔ Brown/White Terminal ①
Multimeter (-) lead ➔ Black Terminal ②



OUT OF SPECIFICATION

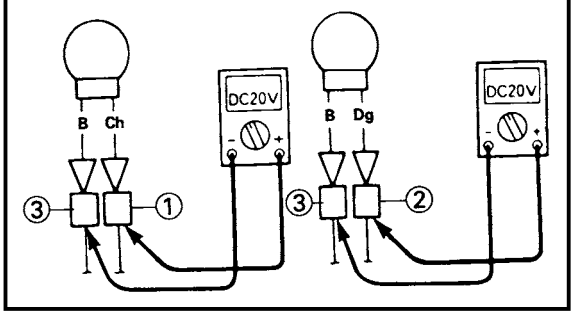
The Flasher Relay is faulty. Replace.

MEETS SPECIFICATION

5. VOLTAGE

- Connect the Multimeter (DC20V) to the Bulb Socket connector
- Turn the Main Switch to 'ON'
- Turn the Turn Switch to left or right
- Check for voltage (12V) on the "Chocolate" lead and "Dark green" at the Flasher Light terminal.

At flasher light (LH)
Multimeter (+) lead ➔ Chocolate Terminal ①
Multimeter (-) lead ➔ Body earth ③
At flasher light (RH)
Multimeter (+) lead ➔ Dark Green Terminal ②
Multimeter (-) lead ➔ Body earth ③



OUT OF SPECIFICATION

MEETS SPECIFICATIONS

This circuit is O.K.

Wiring connection
Wiring circuit from the Turn Switch to Bulb Socket connector is faulty. Repair/Replace
Refer to "CIRCUIT DIAGRAM".

D. If the neutral indicator lights fails to operate.

1. BULB AND BULB SOCKET

- Check the bulb and bulb socket for continuity.

NO CONTINUITY → Replace the Bulb and/or Bulb Socket

CONTINUITY ↓

2. NEUTRAL SWITCH

- Disconnect the neutral switch lead.
- Check the continuity between the switch terminal and ground.

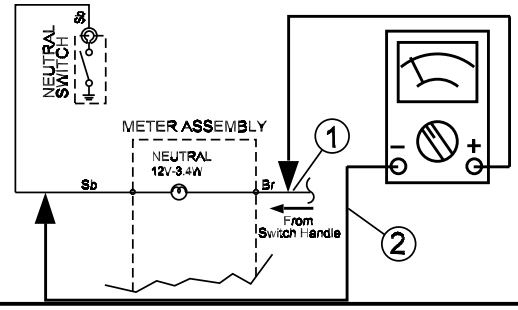
NO CONTINUITY → Replace the Neutral switch.

CONTINUITY ↓

3. VOLTAGE

- Connect the Multimeter (DC20 V) to the neutral switch lead
- Turn the main switch to on position.
- Select the gear position in neutral.
- Check for voltage (12 V) on the “Brown” terminal on the “Neutral Bulb” and body earth (“Sky Blue” wire)

Multimeter (+) lead ➔ Sky Blue Terminal ①
Multimeter (-) lead ➔ Body Earth ②



OUT OF SPECIFICATION → Check the connection of the entire signal system.
Refer to “CIRCUIT DIAGRAM” Page no 7-14.

MEETS SPECIFICATION ↓

This circuit is O.K.

CHAPTER 8

TROUBLE SHOOTING

STARTING FAILURE/ HARD STARTING 8-1
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UNSTABLE HANDLING 8-5
FAULTY SIGNAL AND LIGHTING SYSTEM 8-6

NOTE:

The following troubleshooting does not cover all the possible causes of trouble. It should be helpful, however, as a guide to troubleshooting. Refer to the related procedure in this manual for inspection, adjustment and replacement of parts.

STARTING FAILURE / HARD STARTING

FUEL SYSTEM

Fuel Tank
- Empty
- Clogged Fuel Tank Cap Breather Hole
- Deteriorated fuel or fuel containing water or foreign material

Fuel Cock
- Clogged Fuel Hose
- Clogged Fuel Cock

Carburetor
- Deteriorated fuel or fuel containing water or foreign material
- Clogged Pilot Jet
- Clogged air passage
- Improperly set Pilot Screw
- Clogged Pilot air passage/air jet
- Improperly sealed Valve Seat
- Improperly adjusted Fuel level
- Clogged Starter Jet
- Damaged Carburetor Joint
- Improperly tightened Carburetor Joint Clamp Hose
- Starter Plunger malfunction
- Sucked -in air

Air Filter
- Clogged Air Filter element
- Improper Air Filter fitment

COMPRESSION SYSTEM

Cylinder and Cylinder Head
- Loose Spark Plug
- Loose Cylinder Head
- Broken Cylinder Head Gasket
- Broken Cylinder Gasket
- Worn, damaged or seized Cylinder

Piston and Piston ring
- Worn Piston
- Worn, Fatigued or broken Piston Rings
- Seized Piston Rings
- Seized or damaged Piston

Valve System
- Improperly adjusted Valve clearance
- Improperly sealed Valve
- Improperly contacted Valve and Valve seat
- Improper Valve timing
- Broken Valve Spring
- Seized Valve

POOR IDLE SPEED PERFORMANCE

TRBL SHTG ?

IGNITION SYSTEM

Spark Plug
- Improper Plug gap
- Worn Electrodes
- Wire between Terminals broken
- Improper heat range
- Faulty Spark Plug Cap

Ignition Coil
- Broken or shorted Primary /Secondary Coil
- Faulty High Tension Cord
- Broken Ignition Coil body

Ignition system
- Faulty C.D.I Unit
- Faulty Sensor Coil
- Broken Magneto Woodruff Key

Switch
- Faulty Main Switch

Wiring
- Loose Coupler connection
- Improperly grounded
- Broken Wireharness

R. R. Unit
- Faulty R. R. Unit

POOR IDLE SPEED PERFORMANCE

Carburetor
- Improperly returned Starter Plunger
- Loose or clogged Pilot jet
- Damaged Carburetor Joint
- Improperly tightened Carburetor Joint Clamp hose
- Improperly adjusted idle speed (Pilot Screw) , (Throttle stop Screw)
- Improperly adjusted Throttle Cable
- Flooded Carburetor

Air Filter
- Clogged air filter element

Ignition system
- Faulty Spark Plug
- Faulty High tension Cord
- Faulty C. D. I. Unit
- Faulty Sensor Coil
- Faulty Ignition Coil

Valve system
- Improperly adjusted Valve clearance

POOR MEDIUM AND HIGH SPEED PERFORMANCE

Refer to “STARTING FAILURE/HARD STARTING’’ section. (Fuel system, electrical system, compression system and valve system Page no 8-1)

Carburetor
- Improperly adjusted Fuel Level
- Clogged main Nozzle
- Clogged or loose Pilot jet

Air Filter
- Clogged Air Filter Element

POOR SPEED PERFORMANCE

Ignition System

- Dirty Spark Plug
- Improper heat range
- Faulty C.D.I. Unit
- Faulty Sensor Coil

Fuel System

- Partially Clogged Fuel Tank Cap Breather Hole
- Clogged Air Cleaner element
- Clogged Jet
- Improperly adjusted Fuel Level

Compression System

- Worn Cylinder
- Worn of Seized Piston Rings
- Cylinder Head Gasket Broken
- Cylinder Gasket Broken
- Carbon deposit build-up
- Improperly adjusted Valve clearance
- Improperly contacted Valve and Valve seat
- Faulty Valve timing

Clutch

- Refer to “CLUTCH SLIPPING/DRAGGING’’ section Page no 8-3

Engine Oil

- Improper oil level (low or over oil level)
- Improper quality (low oil viscosity)
- Deterioration
- Clogged oil passage

Brakes

- Dragging brake

CLUTCH SLIPPING/DRAGGING

CLUTCH SLIPPING

Clutch

- Improperly adjusted clutch cable
- Loose clutch spring
- Fatigued clutch spring
- Worn friction plate/clutch plate
- Incorrectly assembled clutch

Engine oil

- Improper oil level
- Improper quality (low viscosity)
- Deterioration

CLUTCH DRAGGING

Clutch

- Warped pressure plate
- Unevenly tensioned clutch spring
- Bent push rod
- Broken clutch boss
- Burnt primary driven gear bushing
- Bent clutch plate
- Swollen friction plate

Engine oil

- Improper oil level
- Improper quality/(high viscosity)
- Deterioration

FAULTY GEAR SHIFTING

HARD SHIFTING

Refer to “CLUTCH DRAGGING’’ Page no 8-3

SHIFT PEDAL DOES NOT MOVE

Shift Shaft
- Bent Shift Shaft

Shift Cam Shift Fork
- Groove jammed with impurities
- Seized Shift Fork
- Bent Shift Fork Guide Bar

Transmission
- Seized Transmission Gear
- Clogged impurities
- Incorrectly assembled transmission

JUMPING -OUT OF GEAR

Shift Shaft
- Improperly returned Stopper Lever

Shift Fork
- Improper thrust play
- Worn Shift Cam groove

Transmission
- Worn gear dog

OVER HEATING

Ignition system
- Improper Spark Plug gap
- Improper Spark Plug heat range
- Faulty C.D.I. unit

Fuel system
- Improper Carburetor setting
- Improper fuel level adjustment
- Clogged air Filter element

Compression System
- Heavy carbon deposit built-up
- Improperly adjusted Valve timing
- Improperly adjusted Valve clearance

Engine oil
- Incorrect Engine oil level
- Improper Engine oil quality (high viscosity)
- Low Engine oil quality

Brakes
- Dragging brake

FAULTY BRAKE

FRONT / REAR BRAKE

- Improper Brake adjustment
- Worn Brake Shoe
- Worn Cam Shaft
- Worn Brake drum
- Oily and greasy Brake lining
- Faulty Brake cable
- Mud or water in to the Brake Drum Inside
- Broken or fatigued Tension Spring
- Faulty Camshaft/ Cam lever

FRONT FORK MALFUNCTION

OIL LEAKAGE

- Bent damaged or rusty Inner Tube
- Damaged or cracked Outer Tube
- Damaged oil seal lip.
- Loose hexagon Bolt
- Damaged Cap Bolt O-ring
- Improperly installed Oil seal

MALFUNCTION

- Bent Inner Tube
- Deformed Outer Tube
- Damaged Fork Spring
- Bent Cylinder Complete
- Improper oil viscosity / Level

UNSTABLE HANDLING

Handlebars

- Improperly installed or bent
- Loose Handlebar Tightening Bolt

Steering

- Improperly installed Handlebar Crown
- Loose or overtightened Steering Nut
- Loose or overtightened Steering Nut
- Bent Under Bracket
- Improperly installed Steering Shaft (improperly tightened Ring Nut)
- Damaged Bearing or Ball Race

Front forks

- Uneven oil levels on both sides
- Uneven spring tension
- Broken Front Fork Spring
- Fatigued Front Fork Spring
- Twisted Front Forks

Wheels

- Incorrect Wheel balance
- Loose Spokes
- Deformed Wheel Rim
- Unevenly worn Tyres
- Incorrect Tyre pressure
- Loose Bearing
- Bent or loose Wheel Axle
- Excessive Wheel Runout

Frame

- Twisted
- Improperly installed Bearing Race
- Faulty Bushing
- Bent Rear Arm

Rear arm

- Worn or damaged Bush
- Bent rear arm

Rear shock absorber

- Fatigued spring
- Improperly adjusted Spring preload
- Oil leakage

Drive chain

- Improperly adjusted Chain line

FAULTY SIGNAL AND LIGHTING SYSTEM

HEADLIGHT DIM
- Improper Bulb
- Too many electric accessories
- Hard charging
- Faulty rectifier/regulator
- Faulty Battery
- Improperly connected coupler, connector wire harness
- Improperly grounded
- Faulty main switch or lights (dimmer) switch

BULB BURNT OUT
- Improper Bulb
- Faulty Battery
- Faulty R. R. Unit
- Improperly grounded
- Improperly mounted Light Unit

FLASHER DOES NOT BLINK
- Improperly grounded
- Insufficient battery capacity
- Faulty Fuse
- Faulty Turn Switch
- Faulty Flasher Relay
- Broken wireharness, incorrect coupler connection
- Bulb burnt out

FLASHER KEEPS ON
- Faulty Flasher Relay
- Insufficient Battery capacity (nearly discharged)
- Bulb burnt out (front or rear)

FLASHER BLINKS SLOWER
- Faulty Flasher Relay
- Insufficient Battery capacity (nearly discharged)
- Improper Bulb
- Faulty Main and/or Turn Switch

FLASHER BLINKS QUICKER
- Improper Bulb
- Faulty Flasher Relay

HORN DOES NOT SOUND
- Faulty Battery
- Faulty Fuse
- Faulty Main and/or Horn Switch
- Improper Horn adjustment
- Faulty Horn (burnt Coil, Connector)
- Broken Wireharness

YAMAHA

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